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Air Pollution Regulations in State Implementation Plans: Kentucky

Abcor Inc, Wilmington, MA Walden Div

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Office of Air Quality
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Research Triangle Park NC 27711

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Air Pollution Regulations in State Implementation Plans: Kentucky

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Air Pollution Regulations in State Implementation Plans:

Kentucky

by

Walden Division of Abcor, Inc.
Wilmington, Massachusetts

Contract No. 68-02-2890

EPA Project Officer: Bob Schell

Prepared for

U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Air, Noise, and Radiation
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

August 1978

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Publication No. EPA-450/3-78-067

INTRODUCTION

This document has been produced in compliance with Section 110(h)(1) of the Clean Air Act Amendments of 1977. The Federally enforceable regulations contained in the State Implementation Plans (SIPs) have been compiled for all 56 States and territories (with the exception of the Northern Mariana Islands). They consist of both the Federally approved State and/or local air quality regulations as indicated in the Federal Register and the Federally promulgated regulations for the State, as indicated in the Federal Register. Regulations which fall into one of the above categories as of January 1, 1978, have been incorporated. As mandated by Congress, this document will be updated annually. State and/or local air quality regulations which have not been Federally approved as of January 1, 1978, are not included here; omission of these regulations from this document in no way affects the ability of the respective Federal, State, or local agencies to enforce such regulations.

There have been recent changes in the Federal enforceability of parking management regulations and indirect source regulations. The October, 1977, appropriation bill for EPA prohibited Federal enforcement of parking management regulations in the absence of specific Federal authorizing legislation. Federally promulgated parking management regulations have, therefore, been suspended indefinitely. Pursuant to the 1977 Clean Air Act Amendments, indirect source regulations may not be required for the approval of a given SIP. Consequently, any State adopted indirect source regulations may be suspended or revoked; State adopted indirect source regulations contained in an applicable SIP are Federally enforceable. More importantly, EPA may only promulgate indirect source review regulations which are specific to Federally funded, operated, or owned facilities or projects. Therefore, the Federally promulgated indirect source regulations appearing in this document are not enforceable by EPA except as they relate to Federal facilities.

Since State air quality regulations vary widely in their organization, content, and language, a standardized subject index is utilized in this document. Index listings consist of both contaminant and activity oriented categories to facilitate usage. For example, for regulations which apply to copper smelters, one might look under sulfur compounds (50.2), particulate matter process weight (50.1.1), or copper smelters (51.15). Federal regulations pertaining to a given State immediately follow the approved State and local regulations.

Additionally, a summary sheet of the information included in each comprehensive document is presented prior to the regulatory text to allow one to quickly assess the contents of the document. Specifically, the summary sheets contain the date of submittal to EPA of each revision

to the SIP and the date of the Federal Register in which the revision was either approved or disapproved by EPA. Finally, a brief description or reference of the regulation which was submitted is also included.

This document is not intended to provide a tool for determining the enforceability of any given regulation. As stated above, it is intended to provide a comprehensive compilation of those regulations which are incorporated directly or by reference into Title 40, Part 52, of the Code of Federal Regulations. Consequently, the exclusion of a Federally approved regulation from this document does not diminish the enforceability of the regulation. Similarly, the inclusion of a given regulation (for example, regulations governing pollutants, such as odors, for which there is no national ambient air quality standards) in this document does not, in itself, render the regulation enforceable.

SUMMARY SHEET
OF
EPA-APPROVED REGULATION CHANGES
KENTUCKY

<u>Submittal Date</u>	<u>Approval Date</u>	<u>Description</u>
12/29/73	2/25/74	AP-11 (Indirect Sources) replaced by 401 KAR 3:070
8/29/75	5/10/76	Regs 401 KAR 3:010, 3:020, 3:030, 3:050, 3:060, 3:070, Note: The last sentence in 3:050 Section 3(1) is disapproved Note: Ambient Air Quality Standards (in Section 3) as they apply to Boyd County for SO ₂ are disapproved.
9/16/75	5/10/76	Control Strategies Chapter IV, V

FEDERAL REGULATIONS

<u>Section Number</u>	<u>Description</u>
52.927	Compliance Schedules
52.931	Prevention of Signi- ficant Deterioration

DOCUMENTATION OF CURRENT EPA-APPROVED
STATE AIR POLLUTION REGULATIONS

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- 1.0 DEFINITIONS
- 2.0 GENERAL PROVISIONS AND ADMINISTRATIVE PROCEDURES
- 3.0 REGISTRATION CERTIFICATES, OPERATING PERMITS AND APPLICATIONS
- 4.0 AIR QUALITY STANDARDS (PRIMARY AND SECONDARY)
 - 4.1 PARTICULATES
 - 4.2 SULFUR DIOXIDE
 - 4.3 NITRIC OXIDES
 - 4.4 HYDROCARBONS
 - 4.5 CARBON MONOXIDE
 - 4.6 OXIDANTS
 - 4.7 OTHERS
- 5.0 VARIANCES
- 6.0 COMPLIANCE SCHEDULES
- 7.0 EQUIPMENT MALFUNCTION AND MAINTENANCE
- 8.0 EMERGENCY EPISODES
- 9.0 AIR QUALITY SURVEILLANCE AND SOURCE TESTING
- 10.0 NEW SOURCE PERFORMANCE STANDARDS
- 11.0 NATIONAL EMISSIONS STANDARDS FOR HAZARDOUS AIR POLLUTANTS
- 12.0 MOTOR VEHICLE EMISSIONS AND CONTROLS
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- 19.0 - 49.0
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 - 51.2 COAL OPERATIONS (includes Cleaning, Preparation, Coal Refuse Disposal Areas, Coke Ovens, Charcoal Kilns, Related Topics)
 - 51.3 CONSTRUCTION (includes Cement Plants, Materials Handling, Topics Related to Construction Industry)
 - 51.4 FERROUS FOUNDRIES (includes Blast Furnaces, Related Topics)
 - 51.5 FUEL BURNING EQUIPMENT (coal, natural gas, oil) - Particulates (includes Fuel Content and Other Related Topics)
 - 51.6 FUEL BURNING EQUIPMENT (coal, natural gas, oil) - SO₂ (includes Fuel Content and Other Related Topics)
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 - 51.12 NUCLEAR ENERGY FACILITIES (includes Related Topic)
 - 51.13 OPEN BURNING (includes Forest Management, Forest Fire, Fire Fighting Practice, Agricultural Burning and Related Topics)
 - 51.14 PAPER PULP; WOOD PULP AND KRAFT MILLS (includes Related Topics)
 - 51.15 PETROLEUM REFINERIES
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DEPARTMENT FOR NATURAL RESOURCES AND
ENVIRONMENTAL PROTECTION
Bureau of Environmental Quality
Division of Air Pollution
401 KAR 3:010 General Provisions

(2.0)

(2.0) Section 1. General Application of Regulations and Standards

Regulations of the Department shall be construed and applied in the light of the considerations set forth hereinafter which shall guide the Department in the issuance, modification and revocation of permits.

- (1) All other provisions to the contrary notwithstanding, all air contaminant sources shall as a minimum apply such control procedures as are reasonable, available and practical.
- (2) Nothing in these regulations is intended to permit any practice which is in violation of any statute, ordinance, or regulation.
- (3) These regulations shall be constructed as complementary to each other, and to such other regulations as have been adopted or shall be adopted by the Department. If any provision of these regulations or the application thereof to any person or circumstance is held to be invalid, such invalidity shall not affect other provisions or application of any other part of these regulations, and to this end each provision of these regulations, and the various applications thereof are declared to be severable.

(1.0) Section 2. Definitions

All terms not defined herein shall have the meaning given them in KRS 224.005 or by commonly accepted usage. As used in these regulations, unless the content clearly indicates otherwise, the following words shall have the following meaning:

- (1) "Affected Facility" means an apparatus to which an emission standard is applicable;
- (2) "Air Contaminant or Air Pollutant" includes smoke, dust, soot, grime, carbon or any other particulate matter, radioactive matter, noxious acid, fumes, gases, odor, vapor or any combination thereof;
- (3) "Air Pollution" means the presence in the outdoor atmosphere of one or more air contaminants in sufficient quantities and of such characteristics and duration as is or threatens to be injurious to human, plant, or animal life, or to property, or which unreasonably interfere with the comfortable enjoyment of life or property;

- (4) "Ambient Air Quality Standard" means a numerical expression of a goal to be achieved in a stated time through the application of appropriate preventive and/or control measures. It consists of two (2) parts; a specified concentration level for a particular air contaminant and the time averaging interval over which that concentration level is measured;
- (5) "Commence" means that an owner or operator has undertaken a continuous program of construction or modification or that an owner or operator has entered into a contractual obligation to undertake and complete, within a reasonable time, a continuous program of construction or modification;
- (6) "Compliance Schedule" means a schedule of remedial measures including an enforceable sequence of actions or operations leading to compliance with any limitation or standard;
- (7) "Construction" means fabrication, erection or installation of an air contaminant source;
- (8) "Department" means the Department for Natural Resources and Environmental Protection;
- (9) "Director" means director of the Division of Air Pollution of the Department for Natural Resources and Environmental Protection;
- (10) "District" means an air pollution control district as provided for in KRS Chapter 77;
- (11) "Emission Standard" means that numerical limit which fixes the amount of an air contaminant or air contaminants that may be vented into the atmosphere (open air) from any affected facility or from air pollution control equipment installed in any affected facility;
- (12) "Existing Source" except as otherwise specified under applicable regulations means any source which is in being or under construction on the effective date of these regulations;
- (13) "Fuel" means natural gas, petroleum, coal, wood, and any form of solid, liquid or gaseous fuel derived from such materials for the purpose of creating useful heat;
- (14) "Incineration" means the process of igniting and burning solid, semi-solid, liquid or gaseous combustible wastes;
- (15) "Malfunction" means any sudden and unavoidable failure of air pollution control equipment or process equipment or of a process to operate in a normal or usual manner. Failures that are caused entirely or in part by poor maintenance, careless operation or any other preventable upset condition or equipment breakdown shall not be considered malfunctions;

- (16) "Modification" means any physical change in, or change in the method of operation of an affected facility which increases the amount of any air pollutant (to which a standard applies) emitted by such facility or which results in the emission of any air pollutant (to which a standard applies) not previously emitted, except that:
- (a) Routine maintenance, repair, and replacement shall not be considered physical changes and
 - (b) The following shall not be considered a change in the method of operation:
 - 1. An increase in the production rate, if such increase does not exceed the operating design capacity of the affected facility;
 - 2. An increase in hours of operation;
 - 3. Use of an alternative fuel or raw material if, prior to the date any standard under this regulation becomes applicable to such facility, as provided by Subsection (1) of this section, the affected facility is designed to accommodate such alternative use.
- (17) "New Source" means any source, the construction or modification of which is commenced on or after the effective date of these regulations, except that:
- (a) Any source located within the Commonwealth of Kentucky and moved to another premises involving a change of address and is in compliance with current regulations shall be subject to applicable regulations at the new location.
 - (b) Any affected facility in compliance with current regulations commencing operation after a shutdown for more than five (5) years shall be considered a new source.
 - (c) Any affected facility not in compliance with current regulations commencing operation after a shutdown for more than eighteen (18) months shall be considered a new source.
 - (d) Any affected facility not in compliance with current regulations commencing operations after a shutdown for six (6) to eighteen (18) months shall be in compliance with applicable regulations upon startup.
- (18) "Opacity" means the degree to which emissions reduce the transmission of light and obscure the view of an object in the background.

- (19) "Particulate Matter" means any material, except uncombined water which exists in a finely divided form as a liquid or a solid at normal operating conditions;
- (20) "Person or Persons" means any individual, public or private corporation, political subdivision, government agency, municipality, industry, co-partnership, association, firm, trust, estate or other entity whatsoever;
- (21) "Source" means one or more affected facilities, which emits or may emit any air contaminant, contained within a given contiguous property line. The property shall be considered contiguous if separated only by a public thoroughfare, stream, or other right of way.
- (22) "Stack or Chimney" means any flue, conduit, or duct arranged to conduct emissions to the atmosphere;
- (23) "Standard Conditions":
 - (a) For source measurements means 21.1 degree Celsius (70 degrees Fahrenheit) and a pressure of 760 mm Hg (29.92 in. of Hg).
 - (b) For the purpose of air quality determinations means 25 degrees Celsius and a reference pressure of 760 mm Hg.

(2.0) Section 3. Abbreviations

The abbreviations used in these regulations have the following meanings:

ASTM - American Society for Testing and Materials

BTU - British Thermal Unit

°C - Degree Celsius (centigrade)

Cal - calorie

cfm - cubic feet per minute

CH₄ - methane

CO - Carbon Monoxide

CO₂ - Carbon Dioxide

COH - Coefficient of haze

dscf - Dry cubic feet at standard conditions

dscm - Dry cubic meter at standard conditions
°F - Degree Fahrenheit
ft - feet
g - gram(s)
gal - gallon(s)
gr - grain(s)
hr - hour(s)
HCl - Hydrochloric acid
Hg - mercury
HF - Hydrogen Fluoride
H₂O - water
H₂S - Hydrogen sulfide
H₂SO₄ - Sulfuric acid
in - inch(es)
k - 1,000
kg - kilogram(s)
l - liter(s)
LF - linear feet
lb - pound(s)
m - meter(s)
min - minute(s)
mg - milligram(s)
MM - million
mm - millimeter(s)
mo - month

N₂ - Nitrogen
NO - Nitric Oxide
NO₂ - Nitrogen Dioxide
NO_x - Nitrogen Oxides
oz - ounce
O₂ - oxygen
O₃ - ozone
ppb - parts per billion
ppm - parts per million
ppm (w/w) - parts per million (weight by weight)
µg - microgram
psia - pounds per square inch absolute
S - at standard conditions
sec - second
SO₂ - sulfur dioxide
sq - square
yd - yard

(2.0) Section 4. Air Quality Control Regions

Air quality control regions designated by the Administrator of the United States Environmental Protection Agency pursuant to Section 107 of the Clean Air Act as amended are listed in this section. The air quality control regions consist of the territorial area encompassed by the boundaries of the designated jurisdictions herein geographically located within the outermost boundaries of the area so delimited.

(1) Appalachian Intrastate Air Quality Control Region.

In the Commonwealth of Kentucky the following counties:

Bell
Breathitt
Clay
Floyd
Harlan
Jackson
Johnson

Knott
Knox
Laurel
Lee
Leslie
Letcher
Magoffin

Martin
Owsley
Perry
Pike
Rockcastle
Whitley
Wolfe

(2) Bluegrass Intrastate Air Quality Control Region.

In the Commonwealth of Kentucky the following counties:

Anderson
Bourbon
Boyle
Clark
Estill
Fayette

Franklin
Garrard
Harrison
Jessamine
Lincoln
Madison

Mercer
Nicholas
Powell
Scott
Woodford

(3) Evansville (Indiana) - Owensboro - Henderson (Kentucky)
Interstate Air Quality Control Region

In the Commonwealth of Kentucky the following counties:

Daviess
Hancock
Henderson

McLean
Ohio
Union

Webster

(4) Huntington (West Virginia) - Ashland (Kentucky) - Portsmouth -
Irononton (Ohio) Interstate Air Quality Control Region.

In the Commonwealth of Kentucky the following counties:

Bath
Boyd
Bracken
Carter
Elliott

Fleming
Greenup
Lawrence
Lewis
Mason

Menifee
Montgomery
Morgan
Robertson
Rowan

(5) Louisville Interstate Air Quality Control Region.

In the Commonwealth of Kentucky the following county:

Jefferson

(6) Metropolitan Cincinnati (Ohio) Interstate Air Quality Control Region.

In the Commonwealth of Kentucky the following counties:

Boone
Campbell
Carroll

Gallatin
Grant
Kenton

Owen
Pendleton

(7) North Central Kentucky Intrastate Air Quality Control Region.

In the Commonwealth of Kentucky the following counties:

Breckinridge
Bullitt
Grayson
Hardin
Henry

Larue
Marion
Meade
Nelson
Oldham

Shelby
Spencer
Trimble
Washington

(8) Paducah (Kentucky) - Cairo (Illinois) Interstate Air Quality Control Region.

In the Commonwealth of Kentucky the following counties:

Ballard
Caldwell
Calloway
Carlisle
Christian
Crittenden

Fulton
Graves
Hickman
Hopkins
Livingston
Lyon

Marshall
McCracken
Muhlenberg
Todd
Trigg

(9) South Central Kentucky Intrastate Air Quality Control Region.

In the Commonwealth of Kentucky the following counties:

Adair
Allen
Barren
Butler
Casey
Clinton
Cumberland

Edmonson
Green
Hart
Logan
McCreary
Metcalf
Monroe

Pulaski
Russell
Simpson
Taylor
Warren
Wayne

(2.0) Section 5. Classification of Air Quality Control Regions

(1) Classification Criteria

- (a) Classification of regions shall be based upon measured air quality where known or, where not known, estimated air quality in the area of maximum pollutant concentration. Each region shall be classified separately with respect to sulfur oxides, particulate matter, carbon monoxide, nitrogen oxides, photochemical oxidants and such other pollutants as may have standards and priority levels.

- (b) For sulfur oxides and particulate matter, each region shall be classified into one (1) of three (3) categories, defined as Priority I, Priority II or Priority III.
- (c) For carbon monoxide, nitrogen oxides and photochemical oxidants, each region shall be classified into one (1) of two (2) categories, defined as Priority I or Priority III.
- (d) Classifications with respect to hydrocarbons shall be the same as the classifications with respect to photochemical oxidants.
- (e) Ambient concentration limits which define the classification systems for the said pollutants are specified in Table 1.
- (f) The more restrictive classification will be chosen where there is a difference between the described values e.g., if a region is Priority I with respect to an annual average and Priority II with respect to a twenty-four (24) hour maximum value, the classification will be Priority I.

TABLE 1. AMBIENT CONCENTRATIONS LIMITS EXPRESSED IN MICROGRAMS PER CUBIC METER (CARBON MONOXIDE LIMITS ARE EXPRESSED IN MILLIGRAMS PER CUBIC METER) AND PARTS PER MILLION (IN PARENTHESIS) WHICH DEFINE THE CLASSIFICATION SYSTEM.

POLLUTANT	PRIORITY		
	I	II	III
	Greater Than	From-To	Less Than
SULFUR OXIDES			
Annual Arithmetic Mean	100(0.04)	60-100(0.02-0.04)	60(0.02)
24-hour maximum	455(0.17)	260-455(0.10-0.17)	260(0.10)
PARTICULATE MATTER			
Annual Geometric Mean	95	60-95	60
24-hour maximum	325	150-325	150
CARBON MONOXIDE			
8-hour maximum	14(12)*		14(12)
1-hour maximum	55(48)*		55(48)
NITROGEN DIOXIDE			
Annual mean	110(0.06)*		110(0.06)
PHOTOCHEMICAL OXIDANTS			
1-hour maximum	195(0.10)*		195(0.10)

*Greater than or equal to

(2) Classification

The classification of air quality control regions under the provision of this regulation shall be as in Table 2. (Next Page)

TABLE 2. PRIORITY CLASSIFICATION OF AIR QUALITY CONTROL REGIONS WITH RESPECT TO PARTICULATES, SULFUR OXIDES, CARBON MONOXIDE, NITROGEN DIOXIDE AND PHOTOCHEMICAL OXIDANTS (AND HYDROCARBON).

REGION	PARTICULATE MATTER	SULFUR OXIDES	CARBON MONOXIDE	NITROGEN DIOXIDE	PHOTOCHEMICAL OXIDANTS (HYDROCARBON)
Louisville	I	I	III	III	I
Cincinnati	I	II	III	III	I
Paducah-Cairo	I	II	III	III	III
Huntington-Ashland	I	III	III	III	III
Evansville-Henderson	I	II	III	III	III
Bluegrass	II	III	III	III	III
Appalachian	II	III	III	III	III
North Central	II	III	III	III	III
South Central	III	III	III	III	III

(3.0) Section 6. Registration of Air Contaminant Sources

- (1) Persons engaged in the operation of air contaminant sources shall register such sources or discharges which may result from their operation in accordance with the provisions of this regulation.
- (2) The Department may require from such persons reports containing information relating to said sources and air contaminants emitted by each into the atmosphere.
- (3) Registration and reporting of air contaminants sources and their related discharges shall be upon forms provided by the Department.
- (4) This section shall not apply to the following:
 - (a) Those air contaminant sources set forth in Section 15 of 401 KAR 3:060.
 - (b) Indirect heat exchangers with a capacity of one (1) million BTU per hour heat input or less and indirect heat exchangers using natural gas, liquid petroleum gas, or distillate fuel oil as a

main fuel or combinations of these as main or standby fuel, with a capacity of less than fifty (50) million BTU per hour heat input.

(c) Internal combustion engines whether fixed or mobile, and vehicles used for transport of passenger or freight except as may be provided for in subsequent regulations.

(d) Direct fired sources used for heating and ventilating.

(3.0) Section 7. Issuance of Permits and Compliance Schedules

(1) (a) No person shall construct or modify a source unless a permit to construct, therefor, has been issued by the Department.

(b) No person shall use, operate, or maintain a source resulting in the presence of air contaminants in the atmosphere in contravention of any standards and limitations unless an approved compliance schedule has been issued by the Department and is currently in effect.

(c) No person shall use, operate, or maintain a source, which is in compliance with all emission limiting regulations unless a permit to operate therefor, has been issued by the Department and is currently in effect.

(2) (a) Applications for permits or compliance schedules required under Subsection (1) of this section shall be made on forms prepared by the Department for such purpose and shall contain such information as the Department shall deem necessary to determine whether the permit or compliance schedule should be issued.

(b) Applications for permits or compliance schedules shall be signed by the corporate president or his authorized agent; or by an equivalently responsible officer in the case of organizations other than corporations; or, in other cases, by the source owner or operator; or, in the case of political subdivisions, by the highest elected official of such subdivision. Such signature shall constitute personal affirmation that the statements made in the application are true and complete.

(c) The information submitted in the application shall, when specifically requested by the Department, include an analysis of the characteristics, properties and volume of the air contaminants based upon source or stack samples of the air contaminants taken under normal operating conditions. Failure to supply information required or deemed necessary by the Department to enable it to act upon the permit or compliance schedule application shall result in denial of the permit or shall result in disapproval of the compliance schedule.

- (d) An application for a permit or compliance schedule may include one or more affected facilities provided that all are contained within one (1) source. A person may apply for an amended permit to include new affected facilities provided that such new facilities are within the same source.
- (3) (a) In considering permit or compliance schedule applications, the Department shall determine if emission standards and ambient standards are met or will be met upon completion of the compliance schedule. In no case shall a permit be issued or compliance schedule approved where it can be shown either through diffusion calculations or actual ambient air quality monitoring, performed according to methods prescribed by the Department, that the source will prevent or interfere with the attainment or maintenance of state or federal air quality standards. In cases where no emission standards have been prescribed by regulation, the Department shall require the use of all available, practical and reasonable methods to prevent and control air pollution.
- (b) In the event any person or persons alleges themselves under oath to be adversely affected by a proposed or existing source or other physical conditions, the Department shall afford such persons a hearing to determine whether the permit to construct or to operate should be issued or denied.
- (c) Compliance schedules herein shall be subject to approval of the Department. If for any reason, the Department and the source are unable to negotiate a mutually acceptable schedule, the Department will propose a compliance schedule which will be subjected to a hearing pursuant to KRS 224.083. After considering the hearing report, the Department shall issue an appropriate compliance schedule. Once approved and/or issued, compliance schedules, including all increments of progress, shall be legally enforceable.
- (4) Permits and compliance schedules issued hereunder shall be subject to such terms and conditions set forth and embodied in the permit or compliance schedule as the Department shall deem necessary to insure compliance with its standards. Such terms and conditions may include maintenance and availability of records relating to operations which may cause or contribute to air pollution including periodic source or stack sampling of the affected facilities.
- (5) Permits issued hereunder shall be subject to revocation or modification by the Department for the following causes:
 - (a) Failure to comply with the terms and conditions of the permit;
 - (b) Failure to comply with emission standards applicable to an affected facility;

- (c) Failure to comply with the ambient air quality standards for the area in which the source is located.
- (d) Failure to report process or equipment changes which result in an emission increase.
- (6) This section shall not apply to those sources listed in Subsection (4) of Section 6 of this regulation.
- (7) Permits and compliance schedules issued under this regulation are not transferable.

(13.0) Section 8. Monitoring Records and Reporting

- (1) The Department may require the owner or operator of any affected facility to install, use, and maintain stack gas and ambient air monitoring equipment in accordance with such methods as the Department shall prescribe, establish and maintain records of same and make periodic emission reports at intervals prescribed by the Department. Requirements for specific affected facilities are contained in applicable regulations.

(9.0) Section 9. Sampling and Testing Methods

- (1) The Department may require the owner or operator of any affected facility to sample emissions in accordance with such methods as the Department shall prescribe. All tests shall be made under the direction of persons qualified by training and/or experience in the field of air pollution control.
- (2) The Department may conduct tests of emissions of air contaminants from any source. Upon request of the Department the person responsible for the source to be tested shall provide necessary openings in the stacks or ducts and such safe and proper sampling and testing facilities, exclusive of instruments and sensing devices as may be necessary for proper determination of the emission of air contaminants.

(7.0) Section 10. Emissions during Shutdown and Malfunction of Control Equipment

- (1) Emissions which, due to shutdown or malfunction of air pollution control equipment, temporarily exceed the standard set forth by the Department shall be deemed in violation of such standards unless the requirements of this section are satisfied and the determinations specified in Subsection (4) of this section are made.
- (2) When emissions during any planned shutdown and ensuing startup of air pollution control equipment or part thereof exceed the standards, the owner or operator of the source shall notify the Director no later than three (3) days before the planned shutdown. However, if the shutdown is necessitated by events which the owner or operator could not reasonably have foreseen three (3) days before the shutdown, then such

notification shall be given immediately following the determination to shutdown. The notice shall be in writing and shall specify the name of the air contaminant source, its location, the address and telephone number of the person responsible for the source, the reasons for and duration of the proposed shutdown, the nature of the action to be taken during shutdown, the date and time for the action, the physical and chemical composition, rate and concentration of the emissions during such shutdown and ensuing startup, the basis for determination that such shutdown is necessary, and the measures which will be taken to minimize the extent and duration of the emissions during such shutdown and ensuing startup.

- (3) When emissions due to sudden and unforeseen malfunction (or to unforeseen shutdown associated with malfunction) of air pollution control equipment are or may be in excess of the standards, the owner or operator shall notify the Director by telephone as promptly as possible, and shall cause written notice when requested by the Director to be sent to the Director. Such notice shall specify the name of the source, its location, the address and telephone number of the person responsible for the source, the nature and cause of the malfunction, the date and time when such malfunction was first observed, the expected duration, the nature of the action to be taken to correct the malfunction, and an estimate of the physical and chemical composition, rate and concentration of the emission.
- (4) Nothing in this section shall relieve a source from compliance with the standards set forth by the Department unless the Director determines that:
 - (a) The occurrence in question did not result from the failure by the owner or operator of the source to operate and maintain properly the air pollution control equipment;
 - (b) All reasonable steps were taken to correct, as expeditiously as practicable, the conditions causing the emissions to exceed the standards, including the use of off-shift labor and overtime if necessary, and;
 - (c) All reasonable steps were taken to minimize the emissions resulting from the occurrence.
- (5) The Director shall notify the owner or operator of the source of the determination required by this section no later than sixty (60) days after the date that all information required by this section has been submitted. Failure of the Director to give such notification within sixty (60) day period shall have the same effect as a determination that the occurrence is deemed not be a violation of the standards.
- (6) Nothing in this section shall be construed to restrict the Secretary's discretion to take, at any time, appropriate enforcement action under

KRS 224.071, if upon information supplied to him pursuant to this section, or otherwise available to him, he determines that such action is necessary to protect the health or welfare.

(2.0) Section 11. Prohibition of Air Pollution

No person shall permit or cause air pollution as defined in Section 2 of this regulation.

(2.0) Section 12. Circumvention

No person shall cause or permit the installation or use of any device or any means which, without resulting in reduction in the total amount of air contaminant emitted, conceals or dilutes an emission of air contaminant which would otherwise violate these regulations.

DEPARTMENT FOR NATURAL RESOURCES AND
ENVIRONMENTAL PROTECTION
Bureau of Environmental Quality
Division of Air Pollution

(4.0) 401 KAR 3:020 Ambient Air Quality Standards

(2.0) Section 1. Purpose of Standards and Expression of Non-degradation Intention

- (1) (a) Primary ambient air quality standards mean those levels of air quality which the Department judges are necessary, with an adequate margin of safety, to protect the public health.
- (b) Secondary ambient air quality standards mean those levels of air quality which the Department judges necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
- (2) In the establishment of these standards, it is the intention of the Department to prohibit further significant and avoidable deterioration of air quality in areas where air quality presently exists which is numerically equal to or less than the standards expressed herein.
- (3) No person shall violate, or interfere with the attainment or maintenance of, ambient air quality standards as specified in Section 4 of this regulation.

(2.0) Section 2. Applicability

The primary and secondary ambient air quality standards stated in Section 4 shall apply at any single point location.

(1.0) Section 3. Definitions

As used in this regulation; all terms not defined herein shall have the meaning given them in 401 KAR 3:010.

- (1) "Ambient Air" means that portion of the atmosphere, external to buildings, to which the general public has access.
- (2) "Reference Method" means a method of sampling and analyzing for an air pollutant as specified by the United States Environmental Protection Agency.

- (3) "Equivalent Method" means any method of sampling and analyzing of an air pollutant which can be demonstrated to the United States Environmental Protection Agency's satisfaction to have a consistent relationship to the reference method.
- (4) "Ambient Air Quality Standard" means the numerical expression of a goal to be achieved in a stated time through the application of appropriate preventive and/or control measures. It consists of two parts:
 - (a) a specified concentration level for a particular air contaminant, and
 - (b) the time averaging interval over which that concentration level is measured.
- (5) "Annual Mean" means an average determined on the basis of any consecutive twelve (12) month interval.
- (6) "Three (3) Month Average" means an average determined on the basis of any consecutive three (3) month interval.
- (7) "Eight (8) Hour Average" means an average determined on the basis of any consecutive eight (8) hour interval.
- (8) "Twelve (12) Hour Average" means an average determined on the basis of any consecutive twelve (12) hour interval.
- (9) "One (1) Week Average" means an average determined on the basis of any consecutive seven (7) day interval.
- (10) "Maximum" means an ambient air quality standard which shall not be exceeded more than once per year providing that the averages exceeding the standard do not contain any common hourly data points.
- (11) "Odor" means the property of an air contaminant that can be detected by the sense of smell.
- (12) "Soiling Index" means a measure of the soiling property of suspended particles in air determined by drawing a measured volume of air through a known area of Whatman No. 4 filter for a measured period of time, expressed as COH/1000 linear feet.
- (13) "Standard Condition" means a reference temperature of 25 degrees Celsius and a reference pressure of 760 millimeters of mercury.
- (14) "Year" means a calendar year.

- (15) "Dilution" means the number of volumes of odorless air that must be added to a like volume of odor-bearing air to reduce the odor of the resulting mixture to just below the odor threshold level.

(4.0) Section 4. Ambient Air Quality Standards

The primary and secondary ambient air quality standards for sulfur oxides, particulate matter, carbon monoxide, total nonmethane hydrocarbons, nitrogen dioxide, hydrogen sulfide, hydrogen fluoride, total fluorides and odors measured by reference methods specified by the Department, or be equivalent methods, are:

(1) Sulfur Oxides (sulfur dioxide):

(a) Primary standards:

1. 80 micrograms per cubic meter (0.03 ppm) - annual arithmetic mean.
2. 365 micrograms per cubic meter (0.14 ppm) - maximum 24-hour average not to be exceeded more than once per year.

(b) Secondary standards:

1. 1300 micrograms per cubic meter (0.50 ppm) - maximum 3-hour average not to be exceeded more than once per year.

(2) Particulate Matter:

(a) Primary standards:

1. 75 micrograms per cubic meter - annual geometric mean.
2. 260 micrograms per cubic meter - maximum 24-hour average not to be exceeded more than once per year.
3. 6.0 COH/1000 LF - maximum 24-hour average of soiling index not to be exceeded more than once per year.

(b) Secondary standards:

1. 60 micrograms per cubic meter - annual geometric mean, to be used as a guide in assessing implementation plans to achieve the 24-hour standard.
2. 150 micrograms per cubic meter - maximum 24-hour average not to be exceeded more than once per year.
3. 0.4 COH/1000 LF - annual arithmetic mean of soiling index

4. 0.5 COH/1000 LF - maximum three-month average of soiling index not to be exceeded more than once per year.
5. 0.3 COH/1000 LF - maximum 24-hour average not to be exceeded more than once per year.
6. 15 tons per square mile per month (5.25 g/sq.m/mo) - maximum three-month average of settleable particulates (total water solubles and insolubles) not to be exceeded more than once per year.

(3) Carbon Monoxide:

Primary and secondary standards:

- (a) 10 milligrams per cubic meter (9 ppm) - maximum 8-hour average not to be exceeded more than once per year.
- (b) 40 milligrams per cubic meter (35 ppm) - maximum 1-hour average not to be exceeded more than once per year.

(4) Photochemical Oxidants:

Measured as O_3 and corrected for interferences due to nitrogen oxides and sulfur dioxide.

Primary and secondary standards: 160 micrograms per cubic meter (0.08 ppm) - maximum 1-hour average not to be exceeded more than once per year.

(5) Hydrocarbons:

Measured as CH_4 and corrected for methane, to be used as a guide in devising implementation plans to achieve photochemical oxidants standards.

Primary and secondary standards: 160 micrograms per cubic meter (0.24 ppm) - maximum 3-hour average (6 to 9 a.m.) not to be exceeded more than once per year.

(6) Nitrogen Dioxide:

Primary and secondary standards: 100 micrograms per cubic meter (0.05ppm) - annual arithmetic mean.

Secondary standards: 14 micrograms per cubic meter (0.01 ppm) - maximum 1-hour average not to be exceeded more than once per year.

(8) Gaseous Fluorides (expressed as HF):

Primary standards:

- (a) 0.82 micrograms per cubic meter (1 ppb) - maximum 1-month average not to be exceeded more than once per year.
- (b) 1.64 micrograms per cubic meter (2 ppb) - maximum 1-week average not to be exceeded more than once per year.
- (c) 2.86 micrograms per cubic meter (3.5 ppb) - maximum 24-hour average not to be exceeded more than once per year.
- (d) 3.68 micrograms per cubic meter (4.5 ppb) - maximum 12-hour average not to be exceeded more than once per year.

(9) Total Fluorides:

Dry weight basis (as fluoride ion) in and on forage for consumption by grazing ruminants

Primary standards:

- (a) Not to exceed 40 ppm (w/w) - average concentration of monthly samples over growing season (not to exceed 6 consecutive months).
- (b) Not to exceed 60 ppm (w/w) - 2-month average.
- (c) Not to exceed 80 ppm (w/w) - 1-month average.

(10) Odors:

Secondary standard: At any time not to equal or exceed 7 dilutions.

(2.0) Section 5. Time Schedule for Achieving Air Quality Standards

Primary and secondary air quality standards shall be achieved no later than April 9, 1975; except for sulfur dioxide which shall be achieved no later than July 1, 1977.

(9.0) Section 6. Methods of Measurement

Air contaminants shall be measured by the reference or equivalent methods and at such frequency as specified in United States Environmental Protection Agency regulations on National Primary and Secondary Ambient Air Quality Standards (40 CFR 50) and on Preparation of Implementation Plans (40 CFR 51).

DEPARTMENT FOR NATURAL RESOURCES AND
ENVIRONMENTAL PROTECTION
Bureau of Environmental Quality
Division of Air Pollution
401 KAR 3:030 Emergency Episodes

(8.0)

(2.0) Section 1. Purpose

Notwithstanding any other provision of the air pollution control regulations, this episode regulation is designed to prevent ambient pollutant concentrations at any location from reaching the following levels which could cause significant harm to the health of persons.

- (1) SO₂: 2,620 µg/cubic meter (1.0 ppm), 24-hour average.
- (2) Particulate: 1,000 µg/cubic meter or 8 COHs/1000 linear feet, 24-hour average.
- (3) SO₂ and Particulate combined: product of SO₂ ppm (24-hour average) and COHs/1000 linear feet (24-hour average) equal to 1.5; or product of SO₂ µg/cubic meter (24-hour average) and the particulate µg/cubic meter (24-hour average) equal to 490,000.0.
- (4) CO: 57.5 mg/cubic meter (50 ppm), 8-hour average. 86.3 mg/cubic meter (75 ppm), 4-hour average. 144 mg/cubic meter (125 ppm), 1-hour average.
- (5) Photochemical Oxidants: 1,200 µg/cubic meter (0.6 ppm), 1-hour average.
- (6) NO₂: 3,750 µg/cubic meter (2.0 ppm), 1-hour average. 938 µg/cubic meter (0.5 ppm), 24-hour average.

(8.0) Section 2. Episode Criteria

Conditions justifying the proclamation of an air pollution alert, air pollution warning, or air pollution emergency shall be deemed to exist whenever the department determines that the accumulation of air contaminants in any place is attaining or has attained levels which could, if such levels are sustained or exceeded, present a threat to the health of the public. In making this determination, the department shall be guided by the following criteria:

- (1) Air Pollution forecast: An internal watch by the Department shall be actuated by a National Weather Service Advisory that an Atmospheric Stagnation Advisory is in effect.
- (2) Alert: An alert level is that concentration of pollutants at which first stage control actions are to begin. An alert will be declared when any one of the following levels is reached at any monitoring site and meteorological conditions are such that the pollutant concentrations can be expected to remain at these levels for twelve (12) or more hours or increase, or in the case of oxidants the situation is likely to reoccur within the next twenty-four (24) hours, unless control actions are taken.
- (a) SO_2 : 800 $\mu\text{g}/\text{cubic meter}$ (0.3 ppm), 24-hour average.
 - (b) Particulate: 3.0 COHs/1000 linear feet or 375 $\mu\text{g}/\text{cubic meter}$, 24-hour average.
 - (c) SO_2 and particulate combined: product of SO_2 ppm, (24-hour average) and COHs/1000 linear feet (24-hour average) equal to 0.2; or product of SO_2 $\mu\text{g}/\text{cubic meter}$ (24-hour average) and particulate, $\mu\text{g}/\text{m}^3$ (24-hour average) equal to 65,000.
 - (d) CO: 17 mg/cubic meter (15 ppm), 8-hour average.
 - (e) Oxidants (O_3): 200 $\mu\text{g}/\text{cubic meter}$ (0.1 ppm), 1-hour average.
 - (f) NO_2 : 1130 $\mu\text{g}/\text{cubic meter}$ (0.6 ppm), 1-hour average; 282 $\mu\text{g}/\text{cubic meter}$ (0.15 ppm), 24-hour average.
- (3) Warning: A warning level indicates that air quality is continuing to degrade and that additional control actions are necessary. A warning will be declared when any one of the following levels is reached at any monitoring site and meteorological conditions are such that pollutant concentrations can be expected to remain at these levels for twelve (12) or more hours or increase, or in the case of oxidants the situation is likely to reoccur with the next twenty-four (24) hours, unless control actions are taken.
- (a) SO_2 : 1600 $\mu\text{g}/\text{cubic meter}$ (0.6 ppm), 24-hour average.
 - (b) Particulate: 5.0 COHs/1000 linear feet or 625 $\mu\text{g}/\text{cubic meter}$, 24-hour average.

- (c) SO₂ and particulate combined - product of SO₂ ppm, (24-hour average) and COHs/1000 linear feet (24-hour average) equal to 0.8; or product of SO₂ µg/cubic meter (24-hour average) and particulate µg/cubic meter (24-hour average) equal to 261,000.
 - (d) CO: 34 mg/cubic meter (30 ppm), 8-hour average.
 - (e) Oxidants (O₃): 800 µg/cubic meter (0.4 ppm), 1-hour average.
 - (f) NO₂: 2,260 µg/cubic meter (1.2 ppm), 1-hour average; 565 µg/cubic meter (0.3 ppm), 24-hour average.
- (4) Emergency: An emergency level indicates that air quality is continuing to degrade to a level that should never be reached and that the most stringent control actions are necessary. An emergency will be declared when any one of the following conditions are such that this condition can be expected to continue for twelve (12) or more hours or increase, or in the case of oxidants the situation is likely to reoccur within the next twenty-four (24) hours, unless control actions are taken.
- (a) SO₂: 2,100 µg/cubic meter (0.8 ppm), 24-hour average.
 - (b) Particulate: 7.0 COHs/1000 linear feet or 875 µg/cubic meter, 24-hour average.
 - (c) SO₂ and particulates combined: product of SO₂ ppm (24-hour average) and COHs/1000 linear feet (24-hour average) equal to 1.2; or product of SO₂ µg/cubic meter (24-hour average) and particulate µg/cubic meter (24-hour average) equal to 393,000.
 - (d) CO: 46 mg/cubic meter (40 ppm), 8-hour average.
 - (e) Oxidants (O₃): 1200 µg/cubic meter (0.6 ppm), 1-hour average.
 - (f) NO₂: 3,000 µg/cubic meter (1.6 ppm), 1-hour average; 750 µg/cubic meter (0.4 ppm), 24-hour average.
- (5) Termination: Any status declared by the application to these criteria will remain in effect until the criteria for that level are no longer met. At such time the next lower appropriate status will be assumed.
- (6) An episode status based on the deterioration of air quality alone may be declared. An air stagnation advisory need not be in effect.
- (7) An appropriate episode status shall be declared when any monitoring site records ambient air quality levels as designated in the episode criteria herein. The criteria shall be applied to individual monitoring sites and not to area wide air quality.

(8.0) Section 3. Emission Reduction Plans

- (1) Air Pollution Alert. When the director declares an air pollution alert, any person responsible for the operation of a source of air contaminants as set forth in Section 5 shall take all air pollution alert actions required for such sources of air contaminants and shall put into effect the preplanned strategy for an air pollution alert.
- (2) Air Pollution Warning. When the director declares an air pollution warning, any person responsible for the operation of a source of air contaminants as set forth in Section 6 shall take all air pollution warning actions required for such sources of air contaminants and shall put into effect the preplanned strategy for an air pollution warning.
- (3) Air Pollution Emergency. When the director declares an air pollution emergency, any person responsible for the operation of a source of air contaminants described in Section 7 shall take all air pollution emergency actions required for such sources of air contaminants and shall put into effect the preplanned strategy for an air pollution emergency.

(8.0) Section 4. Preplanned Abatement Strategies

- (1) Any person responsible for the operation of a source of air pollutants as set forth in Sections 5 to 7 shall prepare standby plans for reducing the emission of air pollutants during episode periods (air pollution alert, warning and emergency). Standby plans shall be designed to reduce or eliminate emission of air pollutants in accordance with the objectives set forth in Sections 5 to 7 of this regulation.
- (2) Any person responsible for the operation of a source of air pollutants not set forth under Subsection (1) of this section shall, when requested by the director in writing, prepare standby plans for reducing the emission of air pollutants during episode periods. Standby plans shall be designed to reduce or eliminate emissions of air pollutants in accordance with the objectives set forth in Sections 5 to 7.
- (3) Standby plans as required under Subsections (1) and (2) of this section shall be in writing and identify the source of air pollutants, the approximate amount of reduction of pollutants, and a brief description of the manner in which the reduction will be achieved during episode periods.
- (4) During episode periods, standby plans required by this section shall be made available on the premises to any person authorized to enforce the provisions of the standby plan.

- (5) Standby plans required by this section shall be submitted to the department upon request within thirty (30) days of the receipt of such request; such plans shall be subject to review and approval by the department. If in the opinion of the department, a plan does not effectively carry out the objectives as set forth in Sections 5 to 7, the department may disapprove it, state its reasons for disapproval and order the preparation of an amended plan within the time period specified in the order.

(8.0) Section 5. Abatement Strategies Emission Reduction Plans: Alert Level

(1) General:

- (a) There shall be no open burning by any person of tree waste, vegetation, refuse, or debris in any form.
 - (b) The use of incinerators for the disposal of any form of solid waste shall be limited to the hours of 12 noon and 4 p.m., local time.
 - (c) Persons operating fuel-burning equipment which requires boiler lancing or soot blowing shall perform such operations only between the hours of 12 noon and 4 p.m., local time.
 - (d) Persons operating motor vehicles should eliminate all unnecessary operations.
- (2) Source curtailment. Any person responsible for the operation of a source of air contaminant listed below shall take all required control actions for this alert level.
- (a) When the source of air contaminant is coal or oil fired electric power generating facilities:
 - 1. Substantial reduction by utilization of fuels having low ash and sulfur content.
 - 2. Maximum utilization of mid-day (12 noon to 4 p.m.) atmospheric turbulence for boiler lancing and soot blowing.
 - 3. Substantial reduction by diverting electric power generation to facilities outside of alert area.
 - (b) When the source of air contaminant is coal and oil fired process steam generating facilities:
 - 1. Substantial reduction by utilization of fuels having low ash and sulfur content.
 - 2. Maximum utilization of mid-day (12 noon to 4 p.m.) atmospheric turbulence for boiler lancing and soot blowing.

3. Substantial reduction of steam load demands consistent with continuing plant operations.
- (c) When the source of air contaminant is manufacturing industries of the following classifications: primary metals industry, petroleum refining operations, chemical industries, mineral processing industries, paper and allied products and grain industry:
1. Substantial reduction of air contaminants from manufacturing operations by curtailing, postponing, or deferring production and all operations.
 2. Maximum reduction by deferring trade waste disposal operations which emit solid particles, gas vapors or malodorous substances.
 3. Maximum reduction of heat load demands for processing.
 4. Maximum utilization of mid-day (12 noon to 4 p.m.) atmospheric turbulence for boiler lancing or soot blowing.

(8.0) Section 6. Emission Reduction Plans: Warning Level

(1) General

- (a) There shall be no open burning by any person of tree waste, vegetation, refuse or debris in any form.
 - (b) The use of incinerators for the disposal of any form of solid waste or liquid waste shall be prohibited.
 - (c) Persons operating fuel-burning equipment which requires boiler lancing or soot blowing shall perform such operations only between the hours of 12 noon and 4 p.m. local time.
 - (d) Persons operating motor vehicles must reduce operations by the use of car pools and increased use of public transportation and the elimination of unnecessary operation.
- (2) Source curtailment. Any person responsible for the operation of a source of air contaminant listed below shall take all required control actions for this warning level.
- (a) When the source of air contaminant is coal or oil fired electric power generating facilities:
 1. Maximum reduction by utilization of fuels having lowest ash and sulfur content.

2. Maximum utilization of mid-day (12 noon to 4 p.m.) atmospheric turbulence for boiler lancing and soot blowing.
 3. Maximum reduction by diverting electric power generation to facilities outside of warning area.
- (b) When the source of air contaminant is coal and oil fired process steam generating facilities:
1. Maximum reduction by utilization of fuels having the lowest available ash and sulfur content.
 2. Maximum utilization of mid-day (12 noon to 4 p.m.) atmospheric turbulence for boiler lancing and soot blowing.
 3. Making ready for use a plan of action to be taken if an emergency develops.
- (c) When the source of air contaminant is manufacturing industries which may require considerable lead time for shut-down including the following classifications: petroleum refining, chemical industries, primary metals industries, glass industries, paper and allied products:
1. Maximum reduction of air contaminants from manufacturing operations by, if necessary, assuming reasonable economic hardships by postponing production and allied operation.
 2. Maximum reduction by deferring trade waste disposal operations which emit solid particles, gases, vapors, or malodorous substances.
 3. Maximum reduction of heat load demands for processing.
 4. Maximum utilization of mid-day (12 noon to 4 p.m.) atmospheric turbulence for boiler lancing and soot blowing.
- (d) When the source of air contaminant is manufacturing industries which may require relatively short lead times for shut-down including the following classifications: primary metals industries, chemical industries, mineral processing industries and grain industry:
1. Elimination of air contaminants from manufacturing operations by ceasing, curtailing, postponing, or deferring production and allied operations to the extent possible without causing injury to persons or damage to equipment.

2. Elimination of air contaminants from the trade waste disposal processes which emit solid particles, gases, vapors, or malodorous substances.
3. Maximum reduction of heat load demands for processing.
4. Maximum utilization of mid-day (12 noon to 4 p.m.) atmospheric turbulence for boiler lancing or soot blowing.

(8.0) Section 7. Emission Reduction Plans: Emergency Level

(1) General

- (a) There shall be no open burning by any person of tree waste, vegetation, refuse, or debris in any form.
- (b) The use of incinerators for the disposal of any form of solid or liquid waste shall be prohibited.
- (c) All places of employment described below shall immediately cease operations:
 1. Mining and quarrying of nonmetallic minerals.
 2. All construction work except that which must proceed to avoid emergent physical harm.
 3. All manufacturing establishments except those required to have in force an air pollution emergency plan.
 4. Wholesale trade establishments: i.e., places of business primarily engaged in selling merchandise to retailers, to industrial, commercial, institutional or professional users, or to other wholesalers, or acting as agents in buying merchandise for or selling merchandise to such persons or companies.
 5. All offices of local, county, and state government including authorities, joint meetings and other public bodies excepting such agencies which are determined by the chief administrative officer of local, county, or state government, authorities, joint meetings and other public bodies to be vital for public safety and welfare and the enforcement of the provisions of this order.
 6. All retail trade establishments except pharmacies and stores primarily engaged in the sale of food.
 7. Banks; credit agencies other than banks: securities and commodities brokers, dealers, and exchanges and services;

offices of insurance carriers, agents and brokers; real estate offices.

8. Wholesale and retail laundries, laundry services; photographic studios; beauty shops, barbershops, shoe repair shops.
 9. Advertising offices; consumer credit reporting, adjustment and collection agencies; duplication, addressing, blue-printing; photocopying, mailing list and stenographic services; equipment rental services, commercial testing laboratories.
 10. Automobile repair, automobile services, garages.
 11. Establishments rendering amusement and recreation services including motion picture theaters.
 12. Elementary and secondary schools, colleges, universities, professional schools, junior colleges, vocational schools, and public and private libraries.
- (d) All commercial and manufacturing establishments not included in this order will institute such actions as will result in maximum reduction of air contaminants from their operations by ceasing, curtailing, or postponing operations which emit air contaminants, to the extent possible without causing injury to persons or damage to equipment.
- (e) The use of motor vehicles is prohibited except in emergencies with the approval of local or state police.
- (2) Source curtailment. Any person responsible for the operation of a source of air contaminant listed below shall take all required control actions for this emergency level.
- (a) When the source of air contaminant is coal or oil fired electric power generating facilities:
1. Maximum reduction by utilization of fuels having lowest ash and sulfur content.
 2. Maximum utilization of mid-day (12 noon to 4 p.m.) atmospheric turbulence for boiler lancing and soot blowing.
 3. Maximum reduction by diverting electric power generation to facilities outside of emergency areas.
- (b) When the source of air contaminant is coal and oil fired process steam generating facilities:
1. Maximum reduction by reducing heat and steam demands to absolute

necessities consistent with preventing equipment damage.

2. Maximum utilization of mid-day (12 noon to 4 p.m.) atmospheric turbulence for boiler lancing and soot blowing.
 3. Taking the action called for in the emergency plan.
- (c) When the source of air contaminant is manufacturing industries of the following classifications: primary metal industries, petroleum refining, chemical industries, mineral processing industries, grain industry, paper and allied products:
1. Elimination of air contaminants from manufacturing operations by ceasing, curtailing, postponing or deferring production and allied operations to the extent possible without causing injury to persons or damage to equipment.
 2. Elimination of air contaminants from trade waste disposal processes which emit solid particles, gases, vapors, or malodorous substances.
 3. Maximum utilization of mid-day (12 noon to 4 p.m.) atmospheric turbulence for boiler lancing or soot blowing.

DEPARTMENT FOR NATURAL RESOURCES AND
ENVIRONMENTAL PROTECTION

Bureau for Environmental Quality
Division of Air Pollution

(11.0) 401 KAR 3:040 Control of Emission of Hazardous Pollutants

(2.0) Section 1. Applicability

The provisions of this regulation apply to the owner or operator of any stationary source for which a standard is prescribed under this regulation. New or modified sources must comply with all standards upon commencing operation. Existing sources shall comply within 90 days after the effective date of this regulation.

(1.0) Section 2. Definitions

As used in this regulation, all terms not defined herein shall have the meaning given them in 401 KAR 3:010.

- (a) "Alternative Method" means any method of sampling and analyzing for an air pollutant which is not a reference method or an equivalent method but which has been demonstrated to the United States Environmental Protection Agency's satisfaction to produce, in specific cases, results adequate for its determination of compliance.
- (b) "Commenced" means that an owner or operator has undertaken a continuous program of construction or modification or that an owner or operator has entered into a contractual obligation to undertake and complete, within a reasonable time, a continuous program of construction or modification.
- (c) "Construction" means fabrication, erection, or installation of a stationary source.
- (d) "Equivalent Method" means any method of sampling and analyzing for an air pollutant which has been demonstrated to the United States Environmental Protection Agency's satisfaction to have a consistent and quantitatively known relationship to the reference method, under specified conditions.
- (e) "Existing Source" means any stationary source which is not a new source.
- (f) "Modification" means any physical change in, or change in the method of operation of, a stationary source which increases the amount of any hazardous air pollutant emitted by such source or which results in the emission of any hazardous air pollutant not previously emitted, except that:

1. Routine maintenance, repair, and replacement shall not be

considered physical changes and

2. The following shall not be considered a change in the method of operation:

a. An increase in the production rate, if such increase does not exceed the operating design capacity of the stationary source;

b. An increase in hours of operation.

(g) "New source" means any stationary source, the construction or modification of which is commenced after the effective date of this regulation.

(h) "Owner or operator" means any person who owns, leases, operates, controls, or supervises a stationary source.

(i) "Reference Method" means any method of sampling and analyzing for an air pollutant, as specified by the United States Environmental Protection Agency regulation on National Emission Standards for Hazardous Air Pollutants (40 CFR 61).

(j) "Startup" means the setting in operation of a stationary source for any purpose.

(k) "Standard" means an emission standard for a hazardous air pollutant adopted under this regulation.

(l) "Stationary source" means any building, structure, facility, or installation which emits or may emit any air pollutant which has been designated as hazardous by the Department.

(11.0) Section 3. Potential Hazardous Emissions

Persons responsible for a source from which hazardous matter may be emitted including but not limited to, antimony, arsenic, asbestos, beryllium, bismuth, lead, mercury, silica, tin, and compounds of such materials, and other toxic materials shall give the utmost care and consideration to the potential harmful effects of the emissions resulting from such activities. Evaluation of such facilities as to adequacy, and emission potential will be made on an individual basis by the Department.

(50.7) Section 4. Emission Standard for Asbestos

(1) Applicability

The provisions of this section are applicable to those sources specified in Subsection (3) of this section.

(2) Definitions

Terms used in this section not defined herein shall have the meaning given to them in 401 KAR 3:010 and in Section 2 of this regulation.

- (a) "Asbestos" means actinolite, amosite, anthophyllite, chrysotile, crocidolite, tremolite.
- (b) "Asbestos Material" means asbestos or any material containing asbestos.
- (c) "Particulate Asbestos Material" means finely divided particles of asbestos material.
- (d) "Asbestos Tailings" mean any solid waste product of asbestos mining or milling operations which contains asbestos.
- (e) "Outside Air" means the air outside buildings and structures.
- (f) "Visible Emissions" mean any emissions which are visually detectable without the aid of instruments and which contain particulate asbestos material.
- (g) "Asbestos Mill" means any facility engaged in the conversion or any intermediate step in the conversion of asbestos ore into commercial asbestos. Outside storage of asbestos materials is not considered a part of such facility.
- (h) "Commercial Asbestos" means any variety of asbestos which is produced by extracting asbestos from asbestos ore.
- (i) "Manufacturing" means the combining of commercial asbestos, or in the case of woven friction products the combining of textiles containing commercial asbestos, with any other material(s), including commercial asbestos, and the processing of this combination into a product as specified in Subsection (3)(c) of this section.
- (j) "Demolition" means the wrecking or removal of any load-supporting structural member.

(3) Emission Standard

- (a) Asbestos mills: There shall be no visible emissions to the outside air from any asbestos mill except as provided in Paragraph (f) of this subsection.

- (b) Roadways: The surfacing of roadways with asbestos tailings is prohibited, except for temporary roadways on an area of asbestos ore deposits. The deposition of asbestos tailings on roadways covered with snow or ice is considered "surfacing."
- (c) Manufacturing: There shall be no visible emissions to the outside air, except as provided in Paragraph (f) of this subsection, from any building or structure in which the following operations are conducted outside of buildings or structures:
 - 1. The manufacture of cloth, cord, wicks, tubing, tape, twine, rope, thread, yarn, roving, lap or other textile materials.
 - 2. The manufacture of cement products.
 - 3. The manufacture of fireproofing and insulating materials.
 - 4. The manufacture of friction products.
 - 5. The manufacture of paper, millboard, and felt.
 - 6. The manufacture of floor tile.
 - 7. The manufacture of paints, coatings, caulks, adhesives, sealants.
 - 8. The manufacture of plastics and rubber materials.
 - 9. The manufacture of chlorine.
- (d) Demolition: Any owner or operator of a demolition operation who intends to demolish any institutional, commercial, or industrial building (including apartment buildings having more than four (4) dwelling units), structure, facility, installation or portion thereof which contains any boiler, pipe, or load-supporting structural member that is insulated or fireproofed with friable asbestos material shall comply with the requirements set forth in this subsection.
 - 1. Notice of intention to demolish shall be provided to the Department by the owner or operator of the demolition operation. Such notice shall be postmarked at least 10 days prior to commencement of demolition or anytime prior to commencement of demolition subject to Paragraph (d) 4 of this subsection.

2. Such notice shall include the following information:
 - a. Name of owner or operator,
 - b. Address of owner or operator,
 - c. Description of the building, structure, facility, or installation to be demolished,
 - d. Address or location of the building, structure, facility or installation,
 - e. Scheduled starting and completion dates of demolition,
 - f. Method of demolition to be employed,
 - g. Procedures to be employed to meet the requirements of this section.
3. The following procedures shall be used to prevent emissions of particulate asbestos material to outside air:
 - a. Friable asbestos material, used to insulate or fire-proof any boiler, pipe, or load-supporting structural member, shall be wetted and removed from any building, structure, facility, or installation subject to this subsection before wrecking of load-supporting structural members is commenced. Boiler, pipe or load-supporting structural members that are insulated or fireproofed with friable asbestos materials may be removed as units or in sections without stripping or wetting, except that where the boiler, pipe or load-supporting structural member is cut or disjointed, the exposed friable asbestos materials shall be wetted. Friable asbestos debris shall be wetted adequately to insure that such debris remains wet during all stages of demolition and related handling operations.
 - b. No pipe or load-supporting structural member that is covered with friable asbestos insulating or fire-proofing material shall be dropped or thrown to the ground from any building, structure, facility, or installation subject to this subsection, but shall be carefully lowered or taken to ground level.
 - c. No friable asbestos debris shall be dropped or thrown to the ground from any building, structure, facility, or installation subject to this paragraph or from any floor to any floor below. For buildings, structures facilities, or installations, fifty (50) feet

or greater in height, friable asbestos debris shall be transported to the ground via dust-tight chutes or containers.

4. Any owner or operator of a demolition operation who intends to demolish a building, structure, facility, or installation to which the provisions of this subsection would be applicable but which has been declared by proper State or local authority to be structurally unsound and which is in danger of imminent collapse is exempt from the requirements of this section other than the reporting requirements specified by Paragraph (d)1. of this subsection and the wetting of friable asbestos debris as specified by Paragraph (d)3.a. of this subsection.
- (e) Spraying: There shall be no visible emissions to the outside air from the spray-on application of materials containing more than one (1) percent asbestos, on a dry weight basis, used to insulate or fireproof equipment and machinery, except as provided in Paragraph (f) of this subsection. Spray-on materials used to insulate or fireproof buildings, structures, pipes, and conduits shall contain less than one (1) percent asbestos on a dry weight basis. Any owner or operator who intends to spray asbestos materials to insulate or fireproof buildings, structures, pipes, conduits, equipment, and machinery shall report such intention to the Department at least twenty (20) days prior to the commencement of the spraying operation. Such report shall include the following information:
1. Name of owner or operator,
 2. Address of owner or operator,
 3. Location of spraying operation,
 4. Procedures to be followed to meet the requirements of this paragraph.
- (f) Rather than meet the no-visible-emission requirements of Paragraphs (a), (c) and (e) of this subsection, an owner or operator may elect to use the methods specified by Subsection (4) of this section to clean emissions containing particulate asbestos material before such emissions escape to, or are vented to, the outside air.
- (g) Where the presence of uncombined water is the sole reason for failure to meet the no-visible-emission requirement of Paragraph (a), (c) or (e) of this subsection, such failure shall not be a violation of such emission requirements.

(4) Air Cleaning

If air-cleaning is elected, as provided by Subsection (3) (f) or this section, the requirements of this subsection shall be met.

- (a) Fabric filter collection devices shall be used, except as noted in Paragraphs (b) and (c) of this subsection. Such devices shall be operated at a pressure drop of no more than 4 inches water gauge, as measured across the filter fabric. The airflow permeability, as determined by a method specified by the Department must not exceed thirty (30) cubic feet/min/square foot for woven fabrics or thirty-five (35) cubic feet/min/square foot for felted fabrics, except that forty (40) cubic feet/min/square foot for woven and forty-five (45) cubic feet/min/square foot for felted fabric is allowed for filtering air from asbestos ore dryers. Each square yard of felted fabric shall weigh at least fourteen (14) ounces and be at least one-sixteenth (1/16) inch thick throughout. Synthetic fabric shall not contain fill yarn other than that which is spun.
- (b) If the use of fabric filters creates a fire or explosion hazard, the Department may authorize the use of wet collections designed to operate with a unit contact energy of at least forty (40) inches water gauge pressure.
- (c) The Department may authorize the use of filtering equipment other than that described in Paragraphs (a) and (b) of this subsection if the owner or operator demonstrates to the satisfaction of the Department that the filtering of particulate asbestos material is equivalent to that of the described equipment.
- (d) All air-cleaning equipment authorized by this subsection shall be properly installed, used, operated, and maintained. Bypass devices may be used only during upset or emergency conditions and then only for so long as it takes to shut down the operation generating the particulate asbestos material.

(5) Reporting

The owner or operator of any existing source to which this section is applicable shall, within ninety (90) days after the effective date of this regulation, provide the following information to the Department.

- (a) A description of the emission control equipment used for each process;
- (b) If a fabric filter device is used to control emissions, the pressure drop across the fabric filter in inches water gauge.

1. If the fabric filter device utilizes a woven fabric, the air flow permeability in cubic feet/min/square foot; and if the fabric is synthetic, indicate whether the fill yarn is spun or not spun.
2. If the fabric filter device utilizes a felted fabric, the density in ounces/square yard, the minimum thickness in inches, and the airflow permeability in cubic feet/min/square foot.

(50.7) Section 5. Emission Standard for Beryllium

(1) Applicability

The provisions of this section are applicable to the following stationary sources:

- (a) Extraction plants, ceramic plants, foundries, incinerators, and propellant plants which process beryllium ore, beryllium, beryllium oxide, beryllium alloys, or beryllium-containing waste.
- (b) Machine shops which process beryllium, beryllium oxides, or any alloy when such alloy contains more than 5 percent beryllium by weight.

(2) Definitions

Terms used in this section not defined herein shall have the meaning given to them in 401 KAR 3:010 and in Section 2 of this regulation.

- (a) "Beryllium" means the element beryllium. Where weights or concentrations are specified, such weights or concentrations apply to beryllium only, excluding the weight or concentration of any associated elements.
- (b) "Extraction Plant" means a facility chemically processing beryllium ore to beryllium metal alloy, or oxide, or performing any of the intermediate steps in these processes.
- (c) "Beryllium Ore" means any naturally occurring material mined or gathered for its beryllium content.
- (d) "Machine shop" means a facility performing cutting, grinding, turning, honing, milling, deburring, lapping, electrochemical machining, etching, or other similar operations.

- (e) "Ceramic Plant" means a manufacturing plant producing ceramic items.
- (f) "Foundry" means a facility engaged in the melting or casting of beryllium metal or alloy.
- (g) "Beryllium-Containing Waste" means material contaminated with beryllium and/or beryllium compounds used or generated during any process or operation performed by a source subject to this section.
- (h) "Incinerator" means any furnace used in the process of burning waste for the primary purpose of reducing the volume of the waste by removing combustible matter.
- (i) "Propellant" means a fuel and oxidizer physically or chemically combined which undergoes combustion to provide rocket propulsion.
- (j) "Beryllium Alloy" means any metal to which beryllium has been added in order to increase its beryllium content and which contains more than 0.1 percent beryllium by weight.
- (k) "Propellant Plant" means any facility engaged in the mixing, casting or machining of propellants.

(3) Emission standard

- (a) Emissions to the atmosphere from stationary sources subject to the provisions of this section shall not exceed ten (10) grams of beryllium over a twenty-four (24) hour period, except as provided in Paragraph (b) of this subsection.
- (b) Rather than meet the requirements of Paragraph (a) of this subsection, an owner or operator may request approval from the Department to meet an ambient concentration limit on beryllium in the vicinity of the stationary source of 0.01 $\mu\text{g}/\text{cubic meter}$ averaged over a thirty (30) day period.
 - 1. Approval of such requests may be granted by the Department provided that:
 - a. At least three (3) years of data is available which in the judgment of the Department demonstrates that the future ambient concentrations of beryllium in the vicinity of the stationary source will not exceed 0.01 $\mu\text{g}/\text{cubic meter}$, averaged over a thirty (30) day period. Such three (3) year period shall be the three (3) years ending thirty (30) days before the effective date of this regulation.

- b. The owner or operator requests such approval in writing within thirty (30) days after the effective date of this regulation.
- c. The owner or operator submits a report to the Department within forty-five (45) days after the effective date of this regulation which includes the following information:
 - (i) Description of sampling method including the method and frequency of calibration,
 - (ii) Method of sampling analysis,
 - (iii) Averaging technique for determining thirty (30) day average concentrations,
 - (iv) Number, identity, and location (address, coordinates, or distance and heading from plant) of sampling sites,
 - (v) Ground elevations and height above ground of sampling inlets,
 - (vi) Plant and sampling area plots showing emission points and sampling sites. Topographic features significantly affecting dispersion including plant building heights and location shall be included,
 - (vii) Information necessary for estimating dispersion including stack height, inside diameter, gas temperature, exit velocity or flow rate and beryllium concentrations,
 - (viii) A description of data and procedures (methods or models) used to design the air sampling network (i.e. number and location of sampling sites),
 - (ix) Air sampling data indicating beryllium concentrations in the vicinity of the stationary source for the three (3) year period specified in Subsection (3)(b)1. of this section. This data shall be presented chronologically and include the beryllium concentration and location of each individual sample taken by the network and the corresponding thirty (30) day average beryllium concentrations.

2. Within sixty (60) days after receiving such report, the Department shall notify the owner or operator in writing whether approval is granted or denied. Prior to denying approval to comply with the provisions of Paragraph (b)1. of this subsection, the Department will consult with representatives of the air contaminant source for which the demonstration report was submitted.
- (c) The burning of beryllium and/or beryllium-containing waste, except propellants, is prohibited except in incinerators, emission from which must comply with the standard specified in this section.

(4) Stack sampling

- (a) Each owner or operator required to comply with Subsection (3)(a) of this section shall test emissions from his source as set forth in 40 CRF 61 as follows:
 1. Within ninety (90) days of the effective date of this regulation in the case of an existing source or a new source which has initial startup date preceding the effective date of this regulation; or
 2. Within ninety (90) days of startup in the case of a new source which does not have an initial startup date preceding the effective date of this regulation.
- (b) The Department shall be notified at least thirty (30) days prior to an emission test so that it may observe the tests.
- (c) Samples shall be taken over such period or periods as are necessary to accurately determine the maximum emissions which will occur in any twenty-four (24) hour period. Where emissions depend upon the relative frequency of operation of different types of processes, operating hours, operating capacities, or other factors, the calculation of maximum twenty-four (24) hour period emissions be based on that combination of factors which are likely to occur during the subject period and which result in the maximum emissions. No changes in the operation shall be made, which would potentially increase emissions above that determined by the most recent source test, until a new emission level has been estimated by calculation and the results reported to the Department.
- (d) All samples shall be analyzed and beryllium emissions shall be determined within thirty (30) days after the source test. All determinations shall be reported to the Department.

- (e) Records of emission test results and other data needed to determine total emissions shall be retained at the source and made available for inspection by the Department for a minimum of two (2) years.

(5) Air Sampling

- (a) Stationary sources subject to Subsection (3)(b) of this section shall locate air sampling sites in accordance with a plan approved by the Department. Such sites shall be located in such a manner calculated to detect maximum concentrations of beryllium in the ambient air.
- (b) All monitoring sites shall be operated continuously except for a reasonable time allowance for instrument maintenance and calibration, for changing filters, or for replacement of equipment needing major repair.
- (c) Filters shall be analyzed and concentration calculated within thirty (30) days after filters are collected. Records of concentrations at all sampling sites and other data needed to determine such concentrations shall be retained at the source and made available for inspection by the Department for a minimum of two (2) years.
- (d) Concentrations measured at all sampling sites shall be reported to the Department every thirty (30) days.
- (e) The Department may at any time require changes in or expansion of the sampling network.

(50.7) Section 6. Emission Standard for Mercury

(1) Applicability

The provisions of this section are applicable to those stationary sources which process mercury ore to recover mercury, or use mercury chlor-alkali cells to produce chlorine gas and alkali metal hydroxide.

(2) Definitions

Terms used in this section not defined herein shall have the meaning given to them in 401 KAR 3:010 and in Section 2 of this regulation:

- (a) "Mercury" means the element mercury, excluding any associated elements, and includes mercury in particulates, vapors, aerosols, and compounds.
- (b) "Mercury ore" means a mineral mined specifically for its mercury content.

- (c) "Mercury Ore Processing Facility" means a facility processing mercury ore to obtain mercury.
- (d) "Condenser Stack Gases" mean the gaseous effluent evolved from the stack of processes utilizing heat to extract mercury metal from mercury ore.
- (e) "Mercury Chlor-alkali Cell" means a device which is basically composed of an electrolyzer section and a denuder (decomposer) section and utilized mercury to produce chlorine gas, hydrogen gas and alkali metal hydroxide.
- (f) "Mercury Chlor-alkali Electrolyzer" means an electrolytic device which is part of a mercury chlor-alkali cell and utilizes a flowing mercury cathode to produce chlorine gas and alkali metal amalgam.
- (g) "Denuder" means a container which is part of a mercury chlor-alkali cell and in which water and alkali metal amalgam are converted to alkali metal hydroxide, mercury, and hydrogen gas in a short-circuited, electrolytic reaction.
- (h) "Hydrogen Gas Stream" means a hydrogen stream formed in the chlor-alkali cell denuder.
- (i) "End Box" means a container(s) located on one or both ends of a mercury chlor-alkali electrolyzer which serves as a connection between the electrolyzer and denuder for rich and stripped amalgam.
- (j) "End Box Ventilation System" means a ventilation system which collects mercury emissions from the end-boxes, the mercury pump sumps, and their water collection systems.
- (k) "Cell room" means a structure(s) housing one or more mercury electrolytic chlor-alkali cells.

(3) Emission Standard

Emissions to the atmosphere from stationary sources subject to the provisions of this sections shall not exceed 3,200 grams of mercury per twenty-four (24) hour period.

(4) Stack Sampling

(a) Mercury ore processing facility.

1. Each owner or operator processing mercury ore shall test emissions from his source as set forth in 40 CFR 61 as follows:

- a. Within ninety (90) days of the effective date of this regulation in the case of existing source or a new source which has an initial startup date preceding the effective date of this regulation; or
 - b. Within ninety (90) days of startup in the case of a new source which did not have an initial startup date preceding the effective date of this regulation.
 2. The Department shall be notified at least thirty (30) days prior to an emission test, so that it may observe the test.
 3. Samples shall be taken over such period or periods as are necessary to accurately determine the maximum emissions which will occur in a twenty-four (24) hour period. No changes in the operation shall be made, which would potentially increase emissions above that determined by the most recent source test, until the new emission level has been estimated by calculation and the results reported to the Department.
 4. All samples shall be analyzed, and mercury emissions shall be determined within thirty (30) days after the source test. Each determination will be reported to the Department.
 5. Records of emission test results and other data needed to determine total emissions shall be retained at the source and made available for inspection by the Department for a minimum of two (2) years.
- (b) Mercury chlor-alkali plant - hydrogen and end-box ventilation gas streams.
1. Each owner or operator employing mercury chlor-alkali cell(s) shall test emissions from his source as follows:
 - a. Within ninety (90) days of the effective date of this regulation in the case of an existing source or a new source which has an initial startup date preceding the effective date of this regulation; or
 - b. Within ninety (90) days of startup on the case of a new source which did not have an initial startup date preceding the effective date of this regulation.
 2. The Department shall be notified at least thirty (30) days prior to an emission test, so that it may at its option observe the test.

3. Samples shall be taken over such period or periods as are necessary to accurately determine the maximum emissions which will occur in a twenty-four (24) hour period. No changes in the operation shall be made, which would potentially increase emissions above that determined by the most recent source test, until the new emission has been estimated by calculation and the results reported to the Department.
 4. All samples shall be analyzed and mercury emissions shall be determined within thirty (30) days after the source test. All the determinations will be reported to the Department.
 5. Records of emission test results and other data needed to determine total emissions shall be retained at the source and made available for inspection by the Department for a minimum of two (2) years.
- (c) Mercury chlor-alkali plants - cell room ventilation system.

1. Stationary sources using mercury chlor-alkali cells may test cell room emissions in accordance with Paragraph (c)2 of this subsection or demonstrate compliance with Paragraph (c)4 of this subsection and assume ventilation emissions of 1,300 g/day of mercury.
2. Each owner or operator shall pass all cell room air in forced gas streams through stacks suitable for testing as set forth in 40 CFR 61 as follows:
 - a. Within ninety (90) days of the effective date of this regulation in the case of an existing source or a new source which has an initial startup date preceding the effective date of this regulation; or
 - b. Within ninety (90) days of startup in the case of a new source which did not have an initial startup date preceding the effective date of this regulation.
3. The Department shall be notified at least thirty (30) days prior to an emission test, so that it may at its option observe the test.
4. An owner or operator may carry out approved design, maintenance and housekeeping practices.

(50.7) Section 7. Emission Standard for Beryllium Rocket Motor Firing

(1) Applicability

The provisions of this section are applicable to rocket motor test sites.

(2) Definitions

Terms used in this section not defined herein shall have the meaning given to them in 401 KAR 3:010 and in Section 2 of this regulation.

- (a) "Rocket motor test site" means any building, structure, facility, or installation where the static test firing of a beryllium rocket motor and/or the disposal of beryllium propellant is conducted.
- (b) "Beryllium propellant" means any propellant incorporating beryllium.

(3) Emission standard

- (a) Emissions to the atmosphere from rocket-motor test sites shall not cause time-weighted atmospheric concentrations of beryllium to exceed seventy-five (75) microgram minutes per cubic meter of air within the limits of ten (10) to sixty (60) minutes, accumulated during any two (2) consecutive weeks, in any area in which an effect adverse to public health could occur.
- (b) If combustion products from the firing of beryllium propellant are collected in a closed tank, emissions from such tank shall not exceed two (2) grams per hour and a maximum to ten (10) grams per day.

(4) Emission testing - rocket firing or propellant disposal.

- (a) Ambient air concentrations shall be measured during and after firing of a rocket motor or propellant disposal and in such a manner that the effect of these emissions can be compared with the standard. Such sampling techniques shall be approved by the Department.
- (b) All samples shall be analyzed and results shall be calculated within thirty (30) days after samples are taken and before any subsequent rocket motor firing or propellant disposal at the given site. All results shall be reported to the Department by a registered letter dispatched before the close of the next business day following determination of such results.

- (c) Records of air sampling test results and other data needed to determine integrated intermittent concentrations shall be retained at the source and made available for inspection by the Department for a minimum of two (2) years.
- (d) The Department shall be notified at least thirty (30) days prior to an air sampling test, so that it may at its option observe the test.

(5) Stack sampling

- (a) Sources subject to Subsection (3)(b) of this section shall be continuously sampled, during release of combustion products from the tank, in such a manner that compliance with the standards can be determined.
- (b) All samples shall be analyzed and beryllium emissions shall be determined within thirty (30) days after samples are taken and before any subsequent rocket motor firing or propellant disposal at the given site. All determinations shall be reported to the Department by a registered letter dispatched before the close of the next business day following such determinations.
- (c) Records of emission test results and other data needed to determine total emissions shall be retained at the source and made available for inspection by the Department for a minimum of two (2) years.
- (d) The Department shall be notified at least thirty (30) days prior to an emission test, so that it may at its option observe the test.

DEPARTMENT FOR NATURAL RESOURCES AND
ENVIRONMENTAL PROTECTION
Bureau of Environmental Quality
Division of Air Pollution
Standards of Performance for New Sources

(10.0) 401 KAR 3:050

(2.0) Section 1. General Provisions

(1) Applicability

Unless specifically defined in subsequent sections, the provisions of this regulation shall apply to the owner or operator of any source which contains any new or modified affected facility the construction of which commenced after the effective date of this regulation.

(2) Definitions

As used in this regulation, all terms not defined herein shall have the meaning given them in 401 KAR 3:010.

- (a) "Standard" means a standard of performance promulgated under this regulation
- (b) "Source" means one or more affected facilities, which emits or may emit any air contaminant, contained within a given contiguous property line. The property shall be considered contiguous if separated only by a public thoroughfare, stream, or other right of way.
- (c) "Affected Facility" means, with respect to a source, any apparatus to which a standard is applicable.
- (d) "Owner or Operator" means any person who owns, leases, operates, controls, or supervises an affected facility or a source of which an affected facility is a part.
- (e) "Construction" means fabrication, erection, or installation of an affected facility.
- (f) "Modification" means any physical change in, or change in the method of operation of an affected facility which increases the amount of any air pollutant (to which a standard applies) emitted by such facility or which results in the emission of any air pollutant (to which a standard applies) not previously emitted,

except that:

1. Routine maintenance, repair, and replacement shall not be considered physical changes and
 2. The following shall not be considered a change in the method of operation:
 - a. An increase in the production rate, if such increase does not exceed the operating design capacity of the affected facility;
 - b. An increase in hours of operation;
 - c. Use of an alternative fuel or raw material if, prior to the date any standard under this regulation becomes applicable to such facility, as provided by Subsection (1) of this section, the affected facility is designed to accommodate such alternative use.
- (g) "Commenced" means, that an owner or operator has undertaken a continuous program of construction or modification or that an owner or operator has entered into a binding agreement or contractual obligation to undertake and complete within a reasonable time, a continuous program of construction or modification.
- (h) "Nitrogen Oxides" means all oxides of nitrogen except nitrous oxide, as measured by test methods specified by the Department.
- (i) "Startup" means the setting in operation of an affected facility for any purpose.
- (j) "Reference Method" means any method of sampling and analyzing for an air pollutant as prescribed in the United States Environmental Protection Agency Regulation of Performance for New Stationary Sources (40 CFR 60).
- (k) "Equivalent Method" means any method of sampling and analyzing for an air pollutant which has been demonstrated to the United States Environmental Protection Agency's satisfaction to have a consistent and quantitatively known relationship to the reference method, under specified conditions.
- (1) "Alternative Method" means any method of sampling and

analyzing for an air pollutant which is not a reference or equivalent method but which has been demonstrated to the United States Environmental Protection Agency's satisfaction to, in specific cases, produce results adequate for its determination of compliance.

- (m) "Particulate Matter" means any finely divided solid or liquid material, other than uncombined water, as measured by the reference method or an equivalent or alternative method.
- (n) "Run" means the net period of time during which an emission sample is collected. Unless otherwise specified, a run may be either intermittent or continuous within the limits of good engineering practice.

(3) Performance Test

- (a) 1. Within sixty (60) days after achieving the maximum production rate at which the affected facility will be operated, but not later than 180 days after initial startup of such facility and at such other times as may be required by the Department the owner or operator of the affected facilities specified below shall conduct performance test(s) and furnish the Department a written report of the results of such performance test(s).
 - a. Process operation with a process weight rate of 100 tons per hour or more.
 - b. Indirect heat exchanger of more than 250 million BTU per hour.
 - c. Incinerator with a charging rate of more than 45 metric tons per day (50 tons/day).
 - d. Portland Cement Plants.
 - e. Nitric Acid Plants.
 - f. Sulfuric Acid Plants.
 - g. Asphalt Concrete Plants.
 - h. Petroleum Refineries.
 - i. Affected facilities specified in Subsections

11 (1), 12 (1) and 13 (1) of this regulation.

j. Sewage Treatment Plants.

2. The Department may require the owner or operator of an affected facility not specified in Paragraph (a) 1 of this subsection to conduct performance test and furnish a written report of the results of such performance test(s), as required by this subsection.
- (b) Performance tests shall be conducted and data reduced in accordance with the test methods and procedures contained in each applicable section unless the Department:
1. Specifies or approves, the use of a reference method with minor changes in methodology,
 2. Approves the use of an equivalent method,
 3. Approves the use of an alternative method the results of which it has determined to be adequate for indicating whether a specific source is in compliance, or
 4. Waives the requirement for performance tests because the owner or operator of a source has demonstrated to the Department's satisfaction that the affected facility is in compliance with the standard. Nothing in this paragraph shall be construed to abrogate the Department's authority to require testing under 401 KAR 3:010.
- (c) The owner or operator shall permit the Department to conduct performance tests at any reasonable time, shall cause the affected facility to be operated for purposes of such tests under such conditions as the Department may specify based on representative performance of the affected facility, and shall make available to the Department such records as may be necessary to determine such performance.
- (d) The owner or operator of an affected facility shall provide the Department ten (10) days prior notice of the performance test to afford the Department the opportunity to have an observer present.

(e) The owner or operator of an affected facility shall provide, or cause to be provided, performance testing facilities as follows:

1. Sampling ports adequate for test methods applicable to such facility.
2. Safe sampling platform(s).
3. Safe access to sampling platform(s).
4. Utilities for sampling and testing equipment.

(f) Each performance test shall consist of three (3) separate runs using the applicable test method. Each run shall be conducted for such time and under such conditions specified in the applicable standard. For the purpose of determining compliance with an applicable standard, the arithmetic mean of the results of the three (3) runs shall apply. In the event that a sample is accidentally lost or conditions occur in which one (1) of the three (3) runs must be discontinued because of forced shutdown, failure of an irreplaceable portion of the sample train, extreme meteorological conditions, or other circumstances, beyond the owner or operator's control, compliance may, upon the Department's approval, be determined using the arithmetic mean of the results of the two (2) other runs.

(4) Ambient Air Monitoring

Persons owning or operating any new affected facility for which a standard is prescribed in this regulation when required by the Department shall install, use, and maintain ambient air monitoring equipment in accordance with methods prescribed in United States Environmental Protection Regulation on National Primary and Secondary Ambient Air Quality Standards (40 CFR 50) and in such number and frequency prescribed by the Department, and shall make periodic ambient air monitoring reports at intervals prescribed by the Department.

(5) Compliance with standards and maintenance requirements.

(a) Compliance with standards in this regulation, other than opacity standards, shall be determined only by performance tests established by Subsection (3) of this section.

- (b) Compliance with opacity standards in this regulation shall be determined by conducting observations in accordance with the reference method as defined in Subsection 1(2)(j). Opacity readings of portions of plumes which contain condensed, uncombined water vapor shall not be used for purposes of determining compliance with opacity standards. The results of continuous monitoring by transmissometer which indicate that the opacity at the time visual observations were made was not in excess of the standard are probative but not conclusive evidence of the actual opacity of an emission, provided that the source shall meet the burden of proving that the instrument used meets (at the time of the alleged violation), performance specification as required by the Department, has been properly maintained and (at the time of the alleged violation) calibrated, and that the resulting data have not been tampered with in any way.
- (c) The opacity standards set forth in this regulation shall apply at all times except during periods of startup, shutdown, malfunction, and as otherwise provided in the applicable standard.
- (d) At all times, including periods of startup, shutdown, and malfunction, owners and operators shall, to the extent practicable, maintain and operate any affected facility including associated air pollution equipment in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Department which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source.
- (e)
 - 1. An owner or operator of an affected facility may request the Department to determine opacity of emissions from the affected facility during the initial performance tests required by Subsection (3) of this section.
 - 2. Upon receipt from such owner or operator of the written report of the results of the performance tests required by Subsection (3) of this section, the Department will make a finding concerning compliance with opacity and other

applicable standards. If the Department finds that an affected facility is in compliance with all applicable standards for which performance tests are conducted in accordance with Subsection (3) of this section, but during the time such performance tests are being conducted fails to meet any applicable opacity standard, the Department within ten (10) days of receipt of notification to make appropriate adjustment to the opacity standard for the affected facility.

3. The Department will grant such a petition upon a demonstration by the owner or operator that the affected facility and associated air pollution control equipment was operated and maintained in a manner to minimize the opacity of emissions during the performance tests; that the performance tests were performed under the conditions established by the Department; and that the affected facility and associated air pollution control equipment were incapable of being adjusted or operated to meet the applicable opacity standard.
4. The Department will establish an opacity standard for the affected facility meeting the above requirements at a level at which the source will be able, as indicated by the performance and opacity tests, to meet the opacity standard at all times during which the source is meeting the mass or concentration emission standard.

(6) Circumvention

No owner or operator subject to the provisions of this regulation shall build, erect, install, or use any article, machine, equipment or process, the use of which conceals an emission which would otherwise constitute a violation of an applicable standard. Such concealment includes, but is not limited to, the use of gaseous diluents to achieve compliance with an opacity standard or with a standard which is based on the concentration of a pollutant in the gases discharged to the atmosphere.

(10.0)

(50.1.1) Section 2. New Stationary Sources - Process Operations

(1) Applicability

The provisions of this section shall apply to each process

operation commenced on or after the effective date of this regulation which shall be the affected facility.

(2) Definitions

As used in this section, all terms not defined herein shall have the meaning given them in 401 KAR 3:010 and in Subsection 1(2) of this regulation.

- (a) "Process Operation" means any method, form, action, operation or treatment of manufacturing or processing, and shall include any storage or handling of materials or products, before, during, or after manufacturing or processing;
- (b) "Process Weight" means the total weight of all materials introduced into any affected facility which may cause any emission of particulate matter, but does not include liquid and gaseous fuels charged, combustion air, or uncombined water.
- (c) "Process Weight Rate" means a rate established as follows:
 - 1. For continuous or long-run steady state operations, the total process weight for the entire period of continuous operation or for a typical portion thereof divided by the number of hours of such period or portion thereof;
 - 2. For cyclical or batch unit operations, or unit processes, the total process weight for a period that covers a complete operation or an integral number of cycles, divided by the hours of actual process operation during such a period.

Where the nature of any process operation or the design of any equipment is such as to permit more than one interpretation which results in the minimum value for allowable emissions shall apply.

- (d) "Affected Facility" as related to process operations means the last operation preceding the emission of air contaminants which results:
 - 1. In the separations of the air contaminant from the process materials or,
 - 2. in the conversion of the process materials into air contaminants, but does not include an air pollution

abatement operation.

(3) Standard for Particulate Matter

No person shall cause, suffer, allow or permit the emission into the open air of particulate matter from any affected facility, or from all air pollution control equipment installed on any affected facility which:

- (a) Is equal to or greater than twenty (20) percent opacity; or,
- (b) Is in excess of the quantity specified in Table 1 of this regulation.

(4) Test Methods and Procedures

The reference methods as defined in Subsection 1 (2) (j) shall be used to determine compliance with the standards prescribed in this regulation.

(51.5)

(51.6)

(51.7)

Section 3. Standards of Performance for Indirect Heat Exchangers

(1) Applicability

The provisions of this section shall apply to each indirect heat exchanger commenced on or after April 9, 1972, which is the affected facility. This section shall not apply to the following: Indirect Heat Exchangers with a capacity of one (1) million BTU per hour input or less and indirect heat exchangers using natural gas, liquid petroleum gas, or distillate fuel oil as a main fuel or combination of these as main or standby fuel, with a capacity of less than 50 million BTU per hour input.

(2) Definitions

As used in this section, all terms not defined herein shall have the meaning given them in 401 KAR 3:010 and in Subsection 1(2) of this regulation.

TABLE 1
ALLOWABLE RATE OF PARTICULATE EMISSION
BASED ON PROCESS WEIGHT

PROCESS WEIGHT RATE		MAXIMUM ALLOWABLE EMISSION RATE
Lb/Hr.	Tons/Hr.	Lb/Hr.
100 or less	0.05 or less	0.56
200	0.10	0.86
400	0.20	1.32
600	0.30	1.70
800	0.40	2.03
1000	0.50	2.34
1500	0.75	3.00
2000	1.00	3.59
2500	1.25	4.12
3000	1.50	4.62
3500	1.75	5.08
4000	2.00	5.52
5000	2.50	6.34
6000	3.00	7.09
7000	3.50	7.81
8000	4.00	8.48
9000	4.50	9.12
10000	5.00	9.74
12000	6.00	10.90
16000	8.00	13.03
18000	9.00	14.02
20000	10.00	14.97
30000	15.00	19.24
40000	20.00	23.00
50000	25.00	26.41
60000	30.00	29.57
70000	35.00	30.57
80000	40.00	31.23
90000	45.00	31.83
100000	50.00	32.37
120000	60.00	33.33
140000	70.00	34.16
160000	80.00	34.90
200000	100.00	36.17
1000000	500.00	46.79
2000000	1000.00	52.28
6000000	3000.00	62.32

Interpolation of the data for process weight rates up to 60,000 lb./hr. shall be accomplished by use of the equation $E = 3.59 P^{0.62}$, and interpolation and extrapolation of the data for process weight rates in excess of 60,000 lb./hr. shall be accomplished by the use of the equation $E = 17.31 P^{0.16}$, where E = rate of emission in lb./hr. and P = process weight rate in tons/hr.

- (a) "Indirect Heat Exchanger" means any piece of equipment, apparatus or contrivance used for the combustion of fuel in which the energy produced is transferred to its point of usage through a medium that does not come in contact with or add to the products of combustion.
 - (b) "Fuel" means natural gas, petroleum, coal, wood, and any form of solid, liquid, or gaseous fuel derived from such materials for the purpose of creating useful heat.
 - (c) "Particulate Matter" means any finely divided liquid or solid material, other than uncombined water, as measured by a method specified by the Department.
- (3) Standard for Particulate Matter.

On and after the date on which the performance test required to be conducted by Subsection 1(3) of this regulation is completed, no owner or operator subject to the provisions of this section shall cause to be discharged into the atmosphere from any affected facility any gases which:

- (a) Contain particulate matter in excess of the weights for each million BTU per hour heat input derived from fuel at any specified capacity rating (expressed in millions of BTU per hour heat input) as listed in the table below:

MM BTU/HR HEAT INPUT	MAXIMUM PARTICULATE EMISSION RATE, POUNDS PER MILLION BTU INPUT
10 or less	0.56
50	0.38
100	0.33
150	0.30
200	0.28
250 or more	0.10

Interpolation of allowable emissions for intermediate heat input values not specified in the table above may be accomplished by the use of the following equation.

$$Y = 0.9634 X^{-0.2356}$$

where Y is the allowable particulate emission in pounds per million BTU heat input, and

X is the millions of BTU per hour heat input capacity rating.

- (b) Exhibit greater than twenty (20) percent opacity except that a maximum of forty (40) percent opacity shall be permissible for not more than two (2) minutes in any hour. Where the presence of uncombined water is the only reason for failure to meet the requirements of this paragraph, such failure will not be a violation of this section.

(4) Standard for Sulfur Dioxide.

- (a) On and after the date on which the performance test required to be conducted by Subsection 1(3) of this regulation is completed no owner or operator, subject to the provisions of this regulation shall cause to be discharged into the atmosphere from any affected facility any gases which contain sulfur dioxide in excess of the weights for each million BTU per hour heat input derived from fuel at any specified capacity rating (expressed in millions of BTU per hour heat input) as listed in table below:

MM BTU/HOUR HEAT INPUT	POUNDS SO ₂ PER MILLION BTU HEAT INPUT	
	LIQUID FUEL	SOLID FUEL
10 or less	3.0	5.0
50	1.5	2.5
100	1.2	1.8
150	1.0	1.5
200	0.9	1.3
250 or more	0.8	1.2

Interpolation of allowable emissions for intermediate heat input values not specified in the table above may be accomplished by use of the equations below for appropriate fuel and heat input specified:

$$\text{Liquid fuel: } Y = 7.7223 X^{-0.4106}$$

$$\text{Solid Fuel: } Y = 13.8781 X^{-0.4434}$$

Where Y = allowable sulfur dioxide emissions in pounds per million BTU per hour heat input, and

X = millions of BTU per hour heat input capacity rating.

- (b) When different fuels are burned simultaneously in any combination, the applicable standard shall be determined by proration using the following formula:

Allowable sulfur dioxide emission in pounds per million BTU per hour heat input =

$$\frac{y(a)+z(b)}{y+z}$$

Where:

y is the percent of total heat input derived from liquid fuel.

z is the percent of total heat input derived from solid fuel.

a is the allowable sulfur dioxide emission in pounds per million BTU heat input derived from liquid fuel, and

b is the allowable sulfur dioxide emission in pounds per million BTU heat input derived from solid fuel.

- (c) Compliance shall be based on the total heat input from all fuels burned, including gaseous fuels.

(5) Standard for Nitrogen Oxides.

- (a) On and after the date on which the performance test required to be conducted by Subsection 1(3) of this regulation is

completed no owner or operator of an indirect heat exchanger with an input heat capacity of 250 mm BTU per hour or more subject to the provisions of this section shall cause to be discharged into the atmosphere from any affected facility any gases which contain nitrogen oxides expressed as NO₂ in excess of:

1. 0.20 lb. per million BTU heat input (0.36 g. per million cal) derived from gaseous fuel.
 2. 0.30 lb. per million BTU heat input (0.54 g. per million cal.) derived from liquid fuel.
 3. 0.70 lb. per million BTU heat input (1.26 g. per million cal. derived from solid fuel (except lignite).
- (b) When different fuels are burned simultaneously in any combination the applicable standard shall be determined by proration. Compliance shall be determined by using the following formula:

Allowable nitrogen dioxide emission in pounds per million BTU/hour heat input =

$$\frac{x(0.20)+y(0.30)+z(0.70)}{x+y+z}$$

where

x is the percent of total heat input derived from gaseous fuel and,

y is the percent of total heat input derived from liquid fuel and,

z is the percent of total heat input derived from solid fuel (except lignite).

(6) Emission and Fuel Monitoring.

- (a) There shall be installed, calibrated, maintained, and operated in any indirect heat exchanger of more than 250 million BTU per hour heat input subject to the provisions of this section, emission monitoring instruments as follows:

1. A photoelectric or other type smoke detector and recorder, except where gaseous fuel is the only fuel burned.
 2. An instrument for continuously monitoring and recording sulfur dioxide emissions, except where gaseous fuel is the only fuel burned, or where compliance is achieved through low sulfur fuels and representative sulfur analysis of fuels are conducted daily in accordance with Paragraph (c) or (d) of this subsection.
 3. An instrument for continuously monitoring and recording emissions of nitrogen oxides.
- (b) Instruments and sampling systems installed and used pursuant to this section shall be capable of monitoring emission levels within ± 20 percent with a confidence level of ninety-five (95) percent and shall be calibrated in accordance with the method(s) prescribed by the manufacturers recommended zero adjustment and calibration procedures at least once per twenty-four (24) hour operating period unless the manufacturer(s) specifies or recommends calibration at shorter intervals, in which case such specifications or recommendations shall be followed. The applicable method specified by the Department shall be the reference method.
- (c) The sulfur content of solid fuels, as burned, shall be determined in accordance with the methods specified by the Department.
- (d) The sulfur content of liquid fuels, as burned, shall be determined in accordance with the methods specified by the Department.
- (e) The rate of fuel burned for each fuel shall be measured daily or at shorter intervals and recorded. The heating value and ash content of fuels shall be ascertained at least once per week and recorded. Where the indirect heat exchanger is used to generate electricity, the average electrical output and the minimum and maximum hourly generation rate shall be measured and recorded daily.
- (f) The owner or operator of an indirect heat exchanger subject to the provisions of this section shall maintain a file of all measurements required by this regulation. Appropriate measurements shall be reduced to the units of the applicable standard daily, and summarized monthly. The

record of any such measurement(s) and summary shall be retained for at least two (2) years following the date of such measurements and summaries.

- (g) The Department may require for any indirect heat exchanger unit of less than 250 million BTU per hour heat input any or all the emission and fuel monitoring required by this subsection.

(7) Test Methods and Procedures.

- (a) The reference methods as defined in Subsection 1(2)(j) shall be used to determine compliance with the standards prescribed in this regulation.
- (b) For determining particulates the sampling time for each run shall be at least sixty (60) minutes and the minimum sample volume shall be 0.85 dscm (30.0 dscf) except that smaller sampling times or sample volumes, when necessitated by process variables or other factors, may be approved by the Department.
- (c) For determining sulfur dioxide and nitrogen oxides, the sampling site shall be the same as that for determining volumetric flow rate. The sampling point in the duct shall be at the centroid of the cross section or at a point no closer to the walls than 1 m (3.28 ft.).
- (d) For determining sulfur dioxide, the minimum sampling time shall be twenty (20) minutes and the minimum sample volume shall be 0.02 dscm (0.71 dscf) except that smaller sampling times or sample volumes, when necessitated by process variables or other factors, may be approved by the Department. The sample shall be extracted at a rate proportional to the gas velocity at the sampling point. The arithmetic average of two samples shall constitute one run. Samples shall be taken at approximately thirty (30) minute intervals.
- (e) For determining nitrogen oxides, each run shall consist of at least four (4) grab samples taken at approximate fifteen (15) minute intervals. The arithmetic mean of the samples shall constitute the run values.
- (f) Heat input, expressed in cal per hr (BTU/hr), shall be determined during each testing period by multiplying the heating value of the fuel by the rate of fuel burned. Heating value shall be determined in accordance with methods

specified by the Department. The rate of fuel burned during each testing period shall be determined by suitable methods and shall be confirmed by a material balance over the affected facility.

- (g) For each run, emissions expressed in g/million cal shall be determined by dividing the emission rate in g/hr by the heat input. The emission rate shall be determined by the equation $\text{g/hr} = Q_s \times C$ where Q_s = volumetric flow rate of the total effluent in dscm/hr as determined for each run.
1. For particulate matter, C = particulate concentration in g/dscm.
 2. For SO_2 , C = SO_2 concentration in g/dscm.
 3. For NO_x , C = NO_x concentration in g/dscm.

(51.9) Section 4. Standards of Performance for Incinerators

(1) Applicability

The provisions of this section shall apply to each incinerator commenced on or after April 9, 1972, which is the affected facility.

(2) Definitions

As used in this section, all terms not defined herein shall have the meaning given them in 401 KAR 3:010 and Subsection 1(2) of this regulation.

- (a) "Incinerator" means any furnace used in the process of burning waste for the purpose of reducing the volume of the waste by removing combustible matter.
- (b) "Day" means twenty-four (24) hours.
- (c) "Auxiliary Fuel" means a substance burned in an incinerator to supply additional heat to attain temperature sufficiently high to dry and ignite waste material and to maintain ignition of the waste material but which is never in contact with the waste material.

(3) Standard for particulate matter.

- (a) On and after the date on which the performance test required to be conducted by Subsection 1(3) of this regulation is completed, no owner or operator of an incinerator of more than forty-five (45) metric tons per day charging rate (50 tons/day) shall cause to be discharged into the atmosphere from any affected facility any gases which contain particulate matter in excess of 0.18 g/dscm (0.08 gf/dscf) corrected to twelve (12) percent CO₂ excluding the contribution of carbon dioxide from auxiliary fuel.
- (b) On and after the date on which the performance test required to be conducted by Subsection 1(3) of this regulation is completed, no owner or operator of an incinerator of forty-five (45) metric tons per day charging rate (50 tons/day) or less shall cause to be discharged into the atmosphere from any affected facility any gases which contain particulate matter in excess of 0.45 g/dscm (0.2 gr/dscf) corrected to twelve (12) percent CO₂ excluding the contribution of carbon dioxide from auxiliary fuel.

(4) Monitoring of Operations.

- (a) The owner or operator of any incinerator of more than forty-five (45) metric tons per day charging rate (50 tons per day) subject to the provisions of this regulation shall record the daily charging rates and hours of operation.

(5) Nameplate

All new incinerators shall have a nameplate installed in a conspicuous place on the unit giving the manufacturer's name, model number, rated capacity and the types of waste material for which the unit is designed.

(6) Test Methods and Procedures

- (a) The reference methods as defined in Subsection 1(2)(j) except as provided for in Subsection 1(3)(b) of this regulation, shall be used to determine compliance with the standard prescribed in Subsection (3) of this section.
- (b) The sampling time for each run shall be at least sixty (60) minutes and the minimum sample volume shall be 0.85 dscm

(30.0 dscf) except that smaller sampling times or sample volumes, when necessitated by process variable or other factors, may be approved by the Department.

- (c) If a wet scrubber is used, the gas analysis sample shall reflect flue gas conditions after the scrubber, allowing for carbon dioxide absorption by sampling the gas on the scrubber inlet and outlet sides according to either the procedure under Paragraphs (c) 1 through (c) 5 of this subsection or the procedure under Paragraphs (c) 1, (c) 2 and (c) 6 of this subsection as follows:

1. The outlet sampling site shall be the same as for the particulate matter measurement.
2. Randomly select nine (9) sampling points within the cross-section at both the inlet and outlet sampling sites. Use the first set of three (3) for the first run, and the third set for the third run.
3. Simultaneously with each particulate matter run, extract and analyze for CO₂, and integrated gas sample traversing the three (3) sample points and sampling at the runs at both inlet and outlet sampling sites.
4. Measure the volumetric flow rate at the inlet during each particulate matter run using the full number of traverse points. For the inlet make two (2) full velocity traverses approximately one (1) hour apart during each run and average the results. The outlet volumetric flow rate may be determined from the particulate matter run.
5. Calculate the adjusted CO₂ percentage using the following equation:

$$(\% \text{ CO}_2)_{\text{adj}} = (\% \text{ CO}_2)_{\text{di}} (Q_{\text{di}}/Q_{\text{do}})$$

where:

$(\% \text{ CO}_2)_{\text{adj}}$ is the adjusted CO₂ percentage which removes the effect of CO₂ absorption and dilution air.

$(\% \text{ CO}_2)_{\text{di}}$ is the percentage of CO₂ measured before the scrubber, dry basis.

Q_{do} is the volumetric flow rate after the

scrubber, dscf/min.

(7) Alternatively, the following procedures may be substituted for the procedures under Paragraphs (c) 3, 4 and 5 of Subsection (6):

- (a) Simultaneously with each particulate matter run, extract and analyze for CO₂, O₂, and N₂ an integrated gas sample traversing the three (3) sample points and sampling for equal increments of time at each point. Conduct the runs at both the inlet and outlet sampling sites.
- (b) After completing the analysis of the gas sample, calculate the percentage of excess air (% EA) for both the inlet and outlet sampling sites.
- (c) Calculate the adjusted CO₂ percentage using the following equation:

$$(\% \text{ CO}_2)_{\text{adj}} = (\% \text{ CO}_2)_{\text{di}} \frac{100 + (\% \text{ EA})_{\text{i}}}{100 + (\% \text{ EA})_{\text{o}}}$$

where:

(% CO₂)_{adj} is the adjusted outlet CO₂ percentage,

(% CO₂)_{di} is the percentage of CO₂ measured before the scrubber, dry basis,

(% EA)_i is the percentage of excess air at the inlet, and

(% EA)_o is the percentage of excess air at the outlet.

- (d) Particulate matter emissions, expressed in g/dscm, shall be corrected to twelve (12) percent CO₂ by using the following formula:

$$c_{12} = \frac{12c}{\% \text{ CO}_2}$$

where:

C₁₂ is the concentration of particulate matter

corrected to twelve (12) percent CO₂,

c is the concentration of particulate matter and,

% CO₂ is the percentage of measured CO₂ or when applicable, the adjusted outlet CO₂ percentage as determined by paragraph (c) of this subsection.

(51.3) Section 5. Standards of Performance for Portland Cement Plants

(1) Applicability

The provisions of the section shall apply to the following affected facilities in portland cement plants commenced on or after April 9, 1972 : kiln, clinker cooler, raw mill system, finish mill system, raw mill dryer, raw material storage, clinker storage, finished product storage, conveyor transfer points, bagging and bulk loading and unloading systems.

(2) Definitions

As used in this section, all terms not defined herein shall have the meaning given them 401 KAR 3:010 and in Section 1(2) of this regulation. "Portland Cement Plant" means any facility manufacturing portland cement by either the wet or dry process".

(3) Standard for Particulate Matter.

- (a) On and after the date on which the performance test required to be conducted by Subsection 1(3) of this regulation is completed, no owner or operator subject to the provisions of this section shall cause to be discharged into the atmosphere from any kiln any gases which:
 - 1. Contain particulate matter in excess of 0115 kg per metric ton of feed (dry basis) to the kiln (0.30 lb per ton).
 - 2. Exhibit greater than twenty (20) percent opacity.
- (b) On and after the date on which the performance test required to be conducted by Subsection 1(3) if completed, no owner or operator subject to the provisions of this

section shall cause to be discharged into the atmosphere from any clinker cooler any gases which:

1. Contain particulate matter in excess of 0.050 kg per metric ton of feed (dry basis) to the kiln (0.10 lb. per ton).
 2. Exhibit ten (10) percent opacity, or greater.
- (c) On and after the date on which the performance test required to be conducted by Subsection 1(3) of this regulation is completed, no owner or operator subject to the provisions of this section shall cause to be discharged into the atmosphere from any affected facility other than the kiln and clinker cooler any gases which exhibit ten (10) percent opacity, or greater.

(4) Monitoring of Operations

The owner or operator of any portland cement plant subject to the provisions of this regulation shall record the daily production rates and kiln feed rates.

(5) Test Methods and Procedures.

- (a) The reference methods as defined in Subsection 1(2)(j), except as provided for in Subsection 1(3)(b) of this regulation, shall be used to determine compliance with the standards prescribed in Subsection (3) of this section.
- (b) For determination of particulates, the minimum sampling time and minimum sample volume for each run, except when process variables or other factors justify otherwise to the satisfaction of the Department shall be as follows:
 1. Sixty (60) minutes and 0185 dscm (30.0 dscf) for the kiln.
 2. Sixty (60) minutes and 1.15 dscm (40.6 dscf) for the clinker cooler.
- (c) Total kiln feed rate (except fuels), expressed in metric tons per hour on a dry basis, shall be determined during each testing period by suitable methods; and shall be confirmed by a material balance over the production system.

- (d) For each run, particulate matter emissions, expressed in g/metric ton of kiln fee, shall be determined by dividing the emission rate in g/hr by the kiln feed rate. The emission rate shall be determined by the equation, $g/hr = Q_s \times c$, where Q_s = volumetric flow rate of the total effluent in dscm/hr, and c = particulate concentration in g/dscm.

(51.10) Section 6. Standards of Performance for Nitric Acid Plants

(1) Applicability

The provisions of this section shall apply to each nitric acid production unit commenced on or after April 9, 1972, which is the affected facility.

(2) Definitions

As used in this section, all terms not defined herein shall have the meaning given them in 401 KAR 3:010 and in Section 1(2) of this regulation.

- (a) "Nitric Acid Production Unit" means any facility producing weak nitric acid by either the pressure or atmospheric pressure process.
- (b) "Weak Acid Production Unit" Means acid which is thirty (30) to seventy (70) percent in strength.

(3) Standard for Nitrogen Oxides.

On and after the date on which the performance test required to be conducted by Subsection 1(3) of this regulation is completed, no owner or operator subject to the provisions of this regulation shall cause to be discharged into the atmosphere from any affected facility any gases which:

- (a) Contain nitrogen oxides, expressed as NO_2 , in excess of 1.5 kg per metric ton of acid produced (3.0 lb per ton), the production being expressed as 100 percent nitric acid.
- (b) Exhibit ten (10) percent opacity, or greater. Where the presence of uncombined water is the only reason for failure to meet the requirements of this paragraph, such failure will not be a violation of this section.

(4) Emission Monitoring

- (a) There shall be installed, calibrated, maintained, and operated, in any nitric acid production unit subject to the provisions of this section, an instrument for continuously monitoring and recording emissions of nitrogen oxides.
- (b) The instrument and sampling system installed and used pursuant to this subsection shall be capable of monitoring emission levels within ± 20 percent with a confidence level of ninety-five (95) percent and shall be calibrated in accordance with the method(s) prescribed by the manufacturer(s) of such instrument, the instrument shall be subjected to manufacturers recommended zero adjustment and calibration procedures at least once per twenty-four (24) hour operating period unless the manufacturer(s) specifies or recommends calibration at shorter intervals, in which case such specifications or recommendations shall be followed. The applicable method specified by the Department shall be the reference method.
- (c) Production rate and hours of operation shall be recorded daily.

(5) Test Methods and Procedures

- (a) The reference methods as defined in Subsection 1(2)(j), except as provided for in Subsection 1(3)(b) of this regulation, shall be used to determine compliance with the standard prescribed in Subsection (3) of this section.
- (b) The sampling point shall be the centroid of the stack or duct or at a point no closer to the walls than 1 m (3.28 ft). Each run shall consist of at least four (4) grab samples taken at approximately fifteen (15) minute intervals. The arithmetic mean of the samples shall constitute the run value. A velocity traverse shall be performed once per run.
- (c) Acid production rate, expressed in metric tons per hour of 100 percent nitric acid, shall be determined during each testing period by suitable methods and shall be confirmed by a material balance over the production system.

- (d) For each run, nitrogen oxides, expressed in g/metric ton of 100 percent nitric acid, shall be determined by dividing the emission rate in g/hr by the acid production rate. The emission rate shall be determined by the equation,

$$\text{g/hr} = Q_s \times c$$

where Q_s = volumetric flow rate of the effluent in dscm/hr. and $c = \text{NO}_x$ concentration in g/dscm.

(51.18) Section 7. Standards of Performance for Sulfuric Acid Plants

(1) Applicability

The provisions of this section shall apply to each sulfuric acid production unit commenced on or after April 9, 1972 which is the affected facility.

(2) Definitions

As used in this section, all terms not defined herein shall have the meaning given them in 401 KAR 3:010 and Subsection 1(2) of this regulation.

- (a) "Sulfuric Acid Production Unit" means any facility producing sulfuric acid by the contact process by burning elemental sulfur, alkylation acid, hydrogen sulfide, organic sulfides and mercaptans, or acid sludge, but does not include facilities where conversion to sulfuric acid is utilized primarily as a means of preventing emissions to the atmosphere of sulfur dioxide or other sulfur compounds.
- (b) "Acid Mist" means sulfuric acid mist, as measured by test methods specified by this Department or an equivalent or alternative method.

(3) Standard for Sulfur Dioxide

On and after the date on which the performance test required to be conducted by Subsection 1(3) of this regulation is completed, no owner or operator subject to the provisions of this section shall cause to be discharged into the atmosphere from any affected facility any gases which contain sulfur

dioxide in excess of 2 kg per metric ton of acid produced (4 lb. per ton), the production being expressed as 100 percent H_2SO_4 .

(4) Standard for Acid Mist.

On and after the date on which the performance test required to be conducted by Subsection 1(3) is completed, no owner or operator subject to the provisions of this section shall cause to be discharged into the atmosphere from any affected facility any gases which:

- (a) Contain acid mist, expressed as H_2SO_4 , in excess of 0.075 kg per metric ton of acid produced (0.15 lb per ton), the production being expressed as 100 percent H_2SO_4 .
- (b) Exhibit ten (10) percent opacity, or greater. Where the presence of uncombined water is the only reason for failure to meet the requirements of this paragraph, such failure will not be a violation of this subsection.

5) Emission Monitoring.

- (a) There shall be installed, calibrated, maintained, and operated, in any sulfuric acid production unit subject to the provisions of this section, an instrument for continuously monitoring and recording emissions of sulfur dioxide.
- (b) The instrument and sampling system installed and used pursuant to this subsection shall be capable of monitoring emission levels within ± 20 percent with a confidence level of ninety-five (95) percent and shall be calibrated in accordance with the method(s) prescribed by the manufacturer(s) of such instrument, the instrument shall be subject to manufacturers recommended zero adjustment calibration procedures at least once per twenty-four (24) hour operating period unless the manufacturer(s) specified or recommends calibration at shorter intervals, in which case such specifications or recommendations shall be followed. The applicable method specified by the Department shall be the reference method.
- (c) Production rate and hours of operation shall be recorded daily.

(6) Test Methods and Procedures

- (a) The reference methods as defined in Subsection 1(2)(j), except as provided for in Subsection 1(3)(b) of this regulation, shall be used to determine compliance with the standards prescribed in Subsections (3) and (4) of this section.
- (b) The moisture content can be considered to be zero. For determination of sulfur dioxide and acid mist the sampling time for each run shall be at least sixty (60) minutes and the minimum sample volume shall be 1.15 dscm (40.6 dscf) except that smaller sampling times or sample volumes, when necessitated by process variables or other factors, may be approved by the Department.
- (c) Acid production rate, expressed in metric tons per hour of 100 percent H_2SO_4 , shall be determined during each testing period by suitable methods and shall be confirmed by a material balance over the production system.
- (d) Acid mist and sulfur dioxide emissions, expressed in g/metric ton of 100 percent H_2SO_4 , shall be determined by dividing the emission rate in g/hr by the acid production rate. The emission rate shall be determined by the equation, $g/hr = Q_s \times c$, where Q_s = volumetric flow rate of the effluent in dscm/hr, and c = acid mist and SO_2 concentrations in g/dscm.

(51.8) Section 8. Standards of Performance for Asphalt Concrete Plants

(1) Applicability

The provisions of this section shall apply to each asphalt concrete plant commenced on or after the effective date of this regulation, which is the affected facility. For the purpose of this section, an asphalt concrete plant is comprised only of any combination of the following: Dryers; systems for screening, handling, storing, and weighing hot aggregate; systems for loading, transferring, and storing mineral filler; systems for mixing asphalt concrete; and the loading, transfer and storage systems associated with emission control systems.

(2) Definitions

As used in this section, all terms not defined herein shall have the meaning given them in 401 KAR 3:010 and in Section 1(2) of this regulation.

- (a) "Asphalt Concrete Plant" means any facility, as described in Subsection (1) of this section used to manufacture asphalt concrete by heating and drying aggregate and mixing with asphalt cements.

(3) Standard for Particulate Matter

- (a) On and after the date on which the performance test required to be conducted by Subsection 1(3) of this regulation is completed, no owner or operator subject to the provisions of this section shall discharge or cause the discharge into the atmosphere from any affected facility any gases which:

1. Contain particulate matter in excess of 90 mg/dscm (0.04 gr/dscf).
2. Exhibit twenty (20) percent opacity, or greater. Where the presence of uncombined water is the only reason for failure to meet the requirements of this paragraph, such failure shall not be a violation of this subsection.

(4) Test Methods and Procedures

- (a) The reference methods as defined in Subsection 1(2)(j) except as provided for in Subsection 1(3)(b) of this regulation, shall be used to determine compliance with the standards prescribed in Subsection (3) of this section as follows.
- (b) For determination of concentration of particulate matter, the sampling time for each run shall be at least sixty (60) minutes and the sampling rate shall be at least 0.9 dscm/hr (0.53 dscf/min) except that shorter sampling times, when necessitated by process variables or other factors, may be approved by the Department.

(51.15) Section 9. Standards of Performance for Petroleum Refineries

(1) Applicability

The provisions of this section shall apply to the following affected facilities in petroleum refineries commenced on or after the effective date of this regulation: Fluid catalytic cracking unit catalyst regenerators, fluid catalytic cracking unit incinerator-waste heat boiler, and fuel gas combustion devices.

(2) Definitions

As used in this section, all terms not defined herein shall have the meaning given them in 401 KAR 3:010 and in Subsection 1 (2) of this regulation.

- (a) "Petroleum Refinery" means any facility engaged in producing gasoline, kerosene, distillate fuel oils, residual fuel oils, lubricants, or other products through distillation of petroleum or reforming of unfinished petroleum derivatives.
- (b) "Petroleum" means the crude oil removed from the earth and the oils derived from tar sands, shale, and coal.
- (c) "Process Gas" means any gas generated by a petroleum refinery process unit, except fuel gas and process upset gas as defined in this subsection.
- (d) "Fuel Gas" means any gas which is generated by a petroleum refinery process unit and which is combusted, including any gaseous mixture of natural gas and fuel gas which is combusted.
- (e) "Process Upset Gas" means any gas generated by a petroleum refinery process unit as a result of start-up, shut-down, upset or malfunction.
- (f) "Refinery Process Unit" means any segment of the petroleum refinery in which a specific processing operation is conducted.
- (g) "Fuel Gas Combustion Device" means any equipment, such as process heaters, boilers and flares used to combust fuel gas, but does not include fluid coking unit and fluid catalytic cracking unit incinerator-waste heat boilers or facilities in which gases are combusted to produce sulfur or sulfuric acid.
- (h) "Coke Burn-off" means the coke removed from the surface of the fluid catalytic cracking unit catalyst by combustion in the catalyst regenerator. The rate of coke burn-off is calculated by a formula specified by the Department.

(3) Standard for Particulate Matter.

(a) On and after the date on which the performance test required to be conducted by Subsection 1(3) of this regulation is completed, no owner or operator subject to the provisions of this section shall discharge or cause the discharge into the atmosphere from any fluid catalytic cracking unit catalyst regenerator or from any fluid catalytic cracking unit incinerator-waste heat boiler:

1. Particulate matter in excess of 1.0 kg/1000 (1.0 lb/1000 lb) of coke burn-off in the catalyst regenerator.
2. Gases exhibiting thirty (30) percent opacity or greater, except for three (3) minutes in any one (1) hour. Where the presence of uncombined water is the only reason for failure to meet the requirements of this paragraph, such failure shall not be a violation of this subsection.

(b) In those instances in which auxiliary liquid or solid fossil fuels are burned in the fluid catalytic cracking unit incinerator-waste heat boiler, particulate matter in excess of that permitted by Paragraph (a) 1. of this subsection may be emitted to the atmosphere, except that the incremental rate of particulate emissions shall not exceed 0.18 g/million cal (0.10 lb/million BTU) of heat input attributable to such liquid or solid fuel.

(4) Standard for Carbon Monoxide. On and after the date on which the performance test required to be conducted by Subsection 1(3) of this regulation is completed, no owner or operator subject to the provisions of this section shall discharge or cause the discharge into the atmosphere from the fluid catalytic cracking unit catalyst regenerator any gases which contain carbon monoxide in excess of 0.050 percent by volume.

(5) Standard for Sulfur Dioxide.

(a) On and after the date on which the performance test required to be conducted by Subsection 1(3) of this regulation is completed, no owner or operator subject to the provisions of this section shall burn in any fuel gas combustion device any fuel gas which contains

H₂S in excess of 230 mg/dscm (0.10 gr/dscf), except as provided in Paragraph (b) of this subsection.

The combustion of process upset gas in a flare, or the combustion in a flare of process gas or fuel gas which is released to the flare as a result of relief valve leakage, is exempt from this paragraph.

- (b) The owner or operator may elect to treat the gases resulting from the combustion of fuel gas in a manner which limits the release of SO₂ to the atmosphere if it is shown to the satisfaction of the Department that this prevents SO₂ to the atmosphere if it is shown to the satisfaction of the Department that this prevents SO₂ emissions as effectively as compliance with the requirements of Paragraph (a) of this subsection.

(6) Emission Monitoring

- (a) The owner or operator of any petroleum refinery subject to the provisions of this section shall install, calibrate, maintain, and operate monitoring instruments as follows:
 - 1. A photoelectric or other type smoke detector and recorder to continuously monitor and record the opacity of gases discharged into the atmosphere from fluid catalytic cracking unit catalyst regenerator.
 - 2. An instrument for continuously monitoring and recording the concentration of CO in gases discharged into the atmosphere from fluid catalytic cracking unit catalyst regenerators, except where the requirements of Paragraph (a) 3 of this subsection are met.
 - 3. Instruments for continuously monitoring and recording firebox temperature and O₂ concentration in the exhaust gases from any incinerator-waste heat boiler which combusts the exhaust gases from a fluid catalytic cracking unit catalyst regenerator except where the requirements of Paragraph (a) 2 of this subsection are met.
 - 4. An instrument for continuously monitoring and recording concentrations of H₂S in fuel gases burned in any fuel gas combustion device, except where the requirements of Subsection (5)(b) of this section are met. Fuel gas combustion devices have a common source of fuel gas may be monitored at one location if sampling at this location produces results representative of the

H₂S concentration in the fuel gas burned.

5. An instrument for continuously monitoring and recording concentrations of SO₂ in the gases discharged into the atmosphere from the combustion of fuel gases except where the requirements of Subsection (5)(a) of this section are met.
- (b) Instruments and sampling systems installed and used pursuant to this subsection shall meet specifications prescribed by the Department and each instrument shall be calibrated in accordance with the method prescribed by the manufacturer of such instrument. The instruments shall be subjected to the manufacturer's recommended zero adjustment and calibration procedures at least once per twenty-four (24) hour operating period unless the manufacturer specifies or recommends calibration at shorter intervals, in which case such specification or recommendations shall be followed.
- (c) The average coke burn-off rate (thousands of kilogram/hr) and hours of operation for any fluid catalytic cracking unit catalyst regenerator subject to Subsections (3) or (4) of this section shall be recorded daily.
- (d) For any fluid catalytic cracking unit catalyst regenerator which is subject to Subsection (3) of this section and which utilizes an incinerator-waste heat boiler to combust the exhaust gases from the catalyst regenerator, the owner or operator, shall record daily the rate of combustion of liquid or solid fossil fuels (liters/hr or kilograms/hr) and the hours of operation during which liquid or solid fossil fuels are combusted in the incinerator-waste heat boiler.
- (e) For the purpose of reports pursuant to Section 8 of 401 KAR 3:010, periods of excess emissions that shall be reported are defined as follows:
 1. Opacity. All hourly periods in which there are four (4) or more one (1) minute periods during which the average opacity of the gases discharged into the atmosphere from any fluid catalytic cracking unit catalyst regenerator subject to Subsection (3) of this section exceeds thirty (30) percent.
 2. Carbon Monoxide. All hourly periods during which the average carbon monoxide concentration in the gases discharged into the atmosphere from any fluid catalytic

cracking unit catalyst regenerator subject to Subsection (4) of this section exceeds 0.050 percent by volume; or any hourly period in which O₂ concentration and firebox temperature measurements indicate that the average concentration of CO in the gases discharged into the atmosphere exceeds 0.050 percent by volume for sources which combust the exhaust gases from any fluid catalytic cracking unit catalyst regenerator subject to Subsection (4) of this section in an incinerator-waste heat boiler and for which the owner or operator elects to monitor in accordance with Subsection (6)(a)3 of this section.

3. Hydrogen Sulfide. All hourly periods during which the average hydrogen sulfide content of any fuel gas combusted in any fuel gas combustion device subject to Subsection (5) of this section exceeds 230 mg/dscm (0.10 gf/dscf) except where the requirements of Subsection (5)(b) of this section are met.
4. Sulfur Dioxide. All hourly periods during which the average sulfur dioxide emissions discharged into the atmosphere from any fuel gas combustion device subject to Subsection (5) of this section exceed the level specified in Subsection (5)(b) of this section, except where the requirements of Subsection (5)(a) of this section are met.

(7) Test Methods and Procedures

- (a) For the purpose of determining compliance with Subsection (3)(a) of this section, the reference methods and calculation procedures prescribed by United States Environmental Protection Agency Regulations on Standards of Performance for New Stationary Sources (40 CFR 60) shall be used.
- (b) For determining concentration of particulate matter release to the atmosphere from the fluid catalytic cracking unit catalyst regenerator, the sampling time for each run shall be at least sixty (60) minutes and the sampling rate shall be at least 0.015 dscm/min (0.53 dscf/min), except that shorter sampling times may be approved by the Department when process variables or other factors preclude sampling for at least sixty (60) minutes.
- (c) For exhaust gases from the fluid catalytic cracking unit catalyst regenerator prior to the emission control system: the integrated sample techniques for gas analysis and moisture content determination, respectively;

- (d) For each run, emissions expressed in kg/1000 kg (English units: lb/1000 lb) of coke burn-off in the catalyst regenerator shall be determined.
- (e) In those instances in which auxiliary liquid or solid fuels are burned in an incinerator-waste heat boiler, the rate of particulate matter emissions permitted under Subsection (3)(b) of this section must be determined. Auxiliary fuel heat input, expressed in millions of cal/hr (English units: Millions of BTU/hr) shall be calculated for each run by fuel flow rate measurement and analysis of the liquid or solid auxiliary fuels. For each run, the rate of particulate emissions permitted under Subsection (3)(b) of this section shall be calculated from an equation prescribed in 40 CFR 60.
- (f) For the purpose of determining compliance with Subsection (4) of this section, the integrated sample technique shall be used. The sample shall be extracted at a rate proportional to the gas velocity at a sampling point near the centroid of the duct. The sampling time shall not be less than sixty (60) minutes.
- (g) For the purpose of determining compliance with Subsection (5)(a) of this section, the reference method shall be used. When refinery fuel gas lines are operating at pressures substantially above atmospheric, the gases samples must be introduced into the sampling train at approximately atmospheric pressure. This may be accomplished with a flow control valve. If the line pressure is high enough to operate the sampling train without a vacuum pump, the pump may be eliminated from the sampling train. The sample shall be drawn from a point near the centroid of the fuel gas line. The minimum sampling time shall be ten (10) minutes and the minimum sampling volume 0.01 dscm (0.35 dscf) for each sample. The arithmetic average of two samples shall constitute one (1) run. Samples shall be taken at approximately one (1) hour intervals. For the most fuel gases, sample times exceeding twenty (20) minutes may result in depletion of the collecting solution, although fuel gases containing low concentrations of hydrogen sulfide may necessitate sampling for longer periods of time.
- (h) The method prescribed in 40 CFR 60 shall be used for determining concentration of SO₂ in determining compliance with Subsection (5)(b) of this section, except that H₂S concentration of the fuel gas may be determined instead. The sampling site for determining SO₂ concentration shall be the same as for determining volumetric flow rate. The sampling point

in the duct for determining SO₂ concentration shall be at the centroid of the cross section if the cross sectional area is less than five (5) square meters (54 square feet) or at a point no closer to the walls than one (1) meter (39 inches) if the cross sectional area is five (5) square meters or more and the centroid is more than one (1) meter from the wall. The sample shall be extracted at a rate proportional to the gas velocity at the sampling point. The minimum sampling time shall be ten (10) minutes and the minimum sampling volume 0.01 dscm (0.35 dscf) for each sample. The arithmetic average of two (2) samples shall constitute one (1) run. Samples shall be taken at approximately one (1) hour intervals.

(51.16) Section 10. Standards of Performance for Storage Vessels for Petroleum Liquids

(1) Applicability

- (a) The provisions of this section shall apply to each storage vessel for petroleum liquids commenced on or after the effective date of this regulation which has a storage capacity greater than 151,412 liters (40,000 gallons), except as provided in Paragraph (b) of this subsection.
- (b) This section does not apply to storage vessels for the crude petroleum or condensate stored, processed, and/or treated at a drilling and production facility prior to custody transfer.
- (c) Those storage vessels for petroleum liquids with a storage capacity greater than 500 gallons but less than 40,000 gallons shall be equipped with a permanent submerged fill pipe or vapor recovery system.

(2) Definitions

As used in this section, all terms not defined herein shall have the meaning given them in 401 KAR 3:010 and Subsection 1 (2) of this regulation.

- (a) "Storage Vessel" means any tank, reservoir, or container used for the storage of petroleum liquids, but does not include:
 - 1. Pressure vessels which are designed to operate in excess

of fifteen (15) pounds per square inch gauge without emissions to the atmosphere except under emergency conditions.

2. Subsurface caverns or porous rock reservoirs, or
 3. Underground tanks if the total volume of petroleum liquids added to and taken from a tank annually does not exceed twice the volume of the tank.
- (b) "Petroleum Liquids" means crude petroleum, condensate, and any finished or intermediate products manufactured in a petroleum refinery but does not mean Number 2 through Number 6 fuel oils, gas turbine fuel oil Number 26T through 4-GT, or diesel fuel oils Numbers 2-D and 4-D as specified by the Department.
- (c) "Petroleum Refinery" means any facility engaged in producing gasoline, kerosene, distillate fuel oils, residual fuel oils, lubricants, or other products through distillation of petroleum or through redistillation, cracking, or reforming of unfinished petroleum derivatives.
- (d) "Crude Petroleum" means a naturally occurring mixture which consists of hydrocarbons and/or sulfur, nitrogen and/or oxygen derivatives of hydrocarbons and which is a liquid at standard conditions.
- (e) "Hydrocarbon" means any organic compound consisting predominantly of carbon and hydrogen.
- (f) "Condensate" means hydrocarbon liquid separated from natural gas which condenses due to changes in the temperature and/or pressure and remains liquid at standard conditions.
- (g) "Custody Transfer" means the transfer of produced crude petroleum and/or condensate, after processing and/or treating in the producing operations, from storage tanks or automatic transfer facilities to pipelines or any other forms of transportation.
- (h) "Drilling and Production Facility" means all drilling and servicing equipment, wells, flow lines, separators, equipment, gathering lines, and auxiliary non-transportation-related equipment used in the production of crude petroleum but does not include natural gas plants.

- (i) "True Vapor Pressure" means the equilibrium partial pressure exerted by a petroleum liquid as determined in accordance with methods specified by the Department.
 - (j) "Floating Roof" means a storage vessel cover consisting of a double deck, pontoon single deck, internal floating cover or covered floating roof, which rests upon and is supported by the petroleum liquid being contained and is equipped with a closure seal or seals to close the space between the roof edge and tank wall.
 - (k) "Vapor Recovery System" means a vapor gathering system capable of collecting all hydrocarbon vapors and gases discharged from the storage vessel and a vapor disposal system capable of processing such hydrocarbon vapors and gases so as to prevent their emission to the atmosphere.
 - (l) "Reid Vapor Pressure" is the absolute vapor pressure of volatile crude oil and volatile non-viscous petroleum liquids, except liquified petroleum gases, as determined by method specified by the Department.
 - (m) "Submerged fill pipe" means any fill pipe the discharge of which is entirely submerged when the liquid level is six (6) inches above the bottom of the tank; or when applied to a tank which is loaded from the side, shall mean every fill pipe the discharge opening of which is entirely submerged when the liquid level is two (2) times the fill pipe diameter above the bottom of the tank.
- (3) Standard for Hydrocarbons
- (a) The owner or operator of any storage vessel to which this section applies shall store petroleum liquids as follows:
 - 1. If the true vapor pressure of the petroleum liquid, as stored, is equal to or greater than 78 mm Hg (1.5 psia) but not greater than 570 mm Hg (11.1 psia), the storage vessel shall be equipped with a floating roof, a vapor recovery system, or their equivalents.
 - 2. If the true vapor pressure of the petroleum liquid as stored is greater than 570 mm Hg (11.1 psia), the storage vessel shall be equipped with a vapor recovery system or its equivalent.

(4) Monitoring of Operations

- (a) The owner or operator of any storage vessel to which this section applies shall, for each such storage vessel, maintain a file of each type of petroleum liquid stored, of the typical Reid vapor pressure of each type of petroleum liquid stored, and of the dates of storage. Dates on which the storage vessel is empty shall be shown.
- (b) The owner or operator of any storage vessel to which this section applies shall, for each such storage vessel, determine and record the average monthly storage temperature and true vapor pressure of the petroleum liquid stored at such temperature if:
 - 1. The petroleum liquid has a true vapor pressure, as stored, greater than 26 mm Hg (0.5 psia) but less than 78 mm Hg (1.5 psia) and is stored in a storage vessel other than one equipped with a floating roof, a vapor recovery system or their equivalents; or
 - 2. The petroleum liquid has a true vapor pressure, as stored, greater than 470 mm Hg (9.1 psia) and is stored in a storage vessel other than one equipped with a vapor recovery system or its equivalent.
- (c) The average monthly storage temperature is an arithmetic average calculated for each calendar month, or portion thereof if storage is for less than a month, from bulk liquid storage temperatures determined at least once every seven (7) days.
- (d) The true vapor pressure shall be determined by the procedures specified by the Department. This procedure is dependent upon determination of the storage temperature and the Reid vapor pressure, which requires sampling of the petroleum liquids in the storage vessels. Unless the Department requires in specific cases that the stored petroleum liquid be sampled, the true vapor pressure may be determined by using the average monthly storage temperature and the typical Reid Vapor pressure. For those liquids for which certified specifications limiting the Reid vapor pressure exist, the Reid vapor pressure may be used. For other liquids, supporting analytical data must be made available on request to the Department when typical Reid Vapor pressure is used.

(51.17) Section 11. Standards of Performance for Secondary Lead Smelters

(1) Applicability

The provisions of this section shall apply to the following affected facilities in secondary lead smelters which commenced on or after the effective date of this regulation: Pot furnaces of more than 250 kg (550 lb) charging capacity, blast (capola) furnaces, and reverberatory furnaces.

(2) Definitions

As used in this section, all terms not defined herein shall have the meaning given them in 401 KAR 3:010 and in Subsection 1(2) of this regulation.

- (a) "Reverberatory Furnace" includes the following types of reverberatory furnaces: stationary, rotating, rocking and tilting.
- (b) "Secondary Lead Smelter" means any facility producing lead from a lead-bearing scrap material by smelting to the metallic form.
- (c) "Lead" means elemental lead or alloys in which the predominant component is lead.

(3) Standard for Particulate Matter.

- (a) On and after the date on which the performance test required to be conducted by Subsection 1(3) of this regulation is completed, no owner or operator subject to the provisions of this section shall discharge or cause the discharge into the atmosphere from a blast (cupola) or reverberatory furnace any gases which:
 - 1. Contain particulate matter in excess of 50 mg/dscm (0.022 gr/dscf).
 - 2. Exhibit twenty (20) percent opacity or greater.
- (b) On and after the date on which the performance test required to be conducted by Subsection 1(3) of this regulation is completed, no owner or operator subject to the provisions of this section shall discharge or cause the discharge into the atmosphere from any pot furnace any gases which exhibit ten (10) percent opacity or greater.

- (c) Where the presence of uncombined water is the only reason for failure to meet the requirements of Paragraphs (a) 2, or (b) of this subsection, such failure shall not be a violation of this subsection.

(4) Test Methods and Procedures.

- (a) The reference methods as defined in Subsection 1 (2) (j), except as provided for in Subsection 1(3)(b) of this regulation, shall be used to determine compliance with the standards prescribed in Subsection (3) of this section.
- (b) For determining of the concentration of particulate matter and associated moisture content, the sampling time for each run shall be at least sixty (60) minutes and the sampling rate shall be at least 0.9 dscm/hr (0.53 dscf/min) except that shorter sampling times, when necessitated by process variables or other factors, may be approved by the Department. Particulate sampling shall be conducted during representative periods of furnace operation, including charging and tapping.

(51.17) Section 12. Standards of Performance for Secondary Brass and Bronze Ingot Production Plants

(1) Applicability

The provisions of this section shall apply to the following affected facilities in secondary brass or bronze ingot production plants which commenced on or after the effective date of this regulation: Reverberatory and electric furnaces of 1,000 kg (2,205 lb) or greater production capacity and blast (cupola) furnaces of 250 kg/hr (550 lb/hr) or greater production capacity.

(2) Definitions

As used in this section, all terms not defined herein shall have the meaning given them in 401 KAR 3:010 and Subsection 1(2) of this regulation.

- (a) "Brass or Bronze" means any metal alloy containing copper as its predominant constituent, and lesser amounts of zinc, tin, lead, or other metals.
- (b) "Reverberatory Furnace" includes the following types of reverberatory furnaces: Stationary, rotating, rocking, and tilting.

- (c) "Electric Furnace" means any furnace which uses electricity to produce over fifty (50) percent of the heat required in the production of refined brass or bronze.
- (d) "Blast Furnace" means any furnace used to recover metal from slag.

(3) Standard for Particulate Matter

- (a) On and after the date on which the performance test required to be conducted by Subsection 1(3) of this regulation is completed, no owner or operator subject to the provisions of this section shall discharge or cause the discharge into the atmosphere from a reverberatory furnace any gases which:
 - 1. Contain particulate matter in excess of 50/mg/dscm (0.022 gr/dscf).
 - 2. Exhibit twenty (20) percent opacity or greater.
- (b) On and after the date on which the performance test required to be conducted by Subsection 1(3) of this regulation is completed, no owner or operator subject to the provisions of this section shall discharge or cause the discharge into the atmosphere from any blast (cupola) or electric furnace any gases which exhibit ten (10) percent opacity or greater.
- (c) Where the presence of uncombined water is the only reason for failing to meet the requirements of Paragraphs (a) 2 or (b) of this subsection, such failure shall not be a violation of this subsection.

(4) Test Methods and Procedures.

- (a) The reference methods as defined in Subsection 1 (2) (j) except as provided for in Subsection 1(3)(b) of this regulation, shall be used to determine compliance with the standards prescribed in Subsection (3) of this section.
- (b) For determining the concentration of particulate matter and the associated moisture content, the sampling time for each run shall be at least 120 minutes and the sampling rate shall be at least 0.9 dscm/hr (0.53 dscf/min) except that shorter sampling times, when necessitated by process variables or other factors, may be approved by the Department. Particulate matter sampling shall be conducted during representative periods of charging and

refining, but not during pouring of the heat.

(51.17) Section 13. Standards of Performance for Iron and Steel Plants

(1) Applicability

The provisions of this section shall apply to each basic oxygen process furnace commenced on or after the effective date of this regulation.

(2) Definitions

As used in this section, all terms not defined herein shall have the meaning given them in 401 KAR 3:010 and Subsection 1(2) of this regulation.

- (a) "Basic Oxygen Process Furnace" (BOPF) means any furnace producing steel by charging scrap steel, hot metal, and flux materials into a vessel and introducing a high volume of oxygen-rich gas.
- (b) "Steel Production Cycle" means the operations required to produce each batch of steel and includes the following major functions: Scrap charging, preheating (when used); hot metal charging, primary oxygen blowing, additional oxygen blowing (when used), and tapping.

(3) Standard for Particulate Matter.

- (a) On and after the date on which the performance test required to be conducted by Subsection 1(3) of this regulation is completed, no owner or operator subject to the provisions of this section shall discharge or cause the discharge into the atmosphere from any affected facility any gases which:

- 1. Contain particulate matter in excess of 50 mg/dscm (0.022 gr/dscf).

(4) Test Methods and Procedures

- (a) The reference methods as defined in Subsection 1 (2) (j), except as provided for in Subsection 1(3)(b) of this regulation, shall be used to determine compliance with the standards prescribed in Subsection (3) of this section.

- (b) For determining the concentration of particulate matter and the associated moisture content, the sampling for each run shall continue for an integral number of cycles with total duration of at least sixty (60) minutes. The sampling rate shall be at least 0.9 dscm/hr (0.53 dscf/min) except that shorter sampling times, when necessitated by process variables or other factors, may be approved by the Department. A cycle shall start at the beginning of either the scrap preheat or the oxygen blow and shall terminate immediately prior to tapping.

(51.9) Section 14. Standards of Performance for Sewage Treatment Plants

(1) Applicability

The provisions of this section shall apply to each incinerator commenced on or after the effective date of this regulation which burns the sludge produced by municipal sewage treatment facilities.

(2) Definitions

As used in this section, all terms not defined herein shall have the meaning given them in 401 KAR 3:010 and Subsection 1(2) of this regulation.

(3) Standard for Particulate Matter.

- (a) On and after the date on which the performance test required to be conducted by Subsection 1(3) of this regulation is completed, no owner or operator of any sewage sludge incinerator subject to the provisions of this section shall discharge or cause the discharge into the atmosphere of:

1. Particulate matter at a rate in excess of 0.65 g/kg dry sludge input (1.30 lb/ton dry sludge input).
2. Any gases which exhibit twenty (20) percent opacity or greater. Where the presence of uncombined water is the only reason for failure to meet the requirements of this paragraph, such failure shall not be a violation of this subsection.

(4) Monitoring of Operations

- (a) The owner or operator of any sludge incinerator subject to the provisions of this section shall:

1. Install, calibrate, maintain, and operate a flow measuring device which can be used to determine either the mass or volume of sludge charged to the incinerator. The flow measuring device shall have an accuracy of ± 5 percent over its operating range.
2. Provide access to the sludge charged so that a well-mixed representative grab sample of the sludge can be obtained.

(5) Test Methods and Procedures

- (a) The reference methods as defined in Subsection 1 (2) (j), except as provided for in Subsection 1(3)(b) of this regulation, shall be used to determine compliance with the standards prescribed in Subsection (3) of this section.
- (b) For determining the concentration of particulate matter and associated moisture content, the sampling time for each run shall be at least sixty (60) minutes and the sampling rate shall be at least 0.015 dscm/min (0.53 dscf/min), except that shorter sampling times, when necessitated by process variables or other factors may be approved by the Department.
- (c) Dry sludge charging rate shall be determined as follows:
 1. Determine the mass (S_m) or volume (S_v) of sludge charged to the incinerator during each run using a flow measuring device meeting the requirements of Subsection (4) (a) 1 of this section. If total input during a run is measured by a flow measuring device, such readings shall be used. Otherwise, record the flow measuring device readings at five (5) minute intervals during a run. Determine the quantity charged during each interval by averaging the flow rates at the beginning and end of the interval and then multiplying the average for each interval by the time for each interval. Then add the quantity charged during the entire run, (S_m) or (S_v).
 2. Collect samples of the sludge charged to the incinerator in non-porous collecting jars at the beginning of each sample the dry sludge content (total solids residue) in accordance with the method specified by the Department.
 3. Determine the quantity of dry sludge per unit sludge charged in terms of either average quantity of dry sludge per unit volume of sludge charged to the incin-

erator, or average ratio of quantity of dry sludge to quantity of sludge charged to the incinerator.

- (d) Particulate emission rate shall be determined by a formula specified by the Department.
- (e) Compliance with Subsection (3)(a) of this section shall be determined according to a formula specified by the Department.

(51.21) Section 15. Standards of Performance for Sources Using Organic Solvents

(1) Applicability

- (a) The provisions of this section shall apply to any affected facility using any organic solvents commenced on or after April 9, 1972.
- (b) The provisions of this section shall not apply to:
 - 1. The manufacture of organic solvents or the transport, loading, or storage of organic solvents or materials containing organic solvents;
 - 2. The spraying or other employment of insecticides, pesticides, or herbicides;
 - 3. The employment, application, evaporation or drying of saturated halogenated hydrocarbons or perchlorethylene;
 - 4. The use of any material, in any affected facility described in (1)(a) above if the volatile content consists only of non-photochemically reactive solvent comprising not more than thirty (30) percent by volume of the material as applied;
 - 5. The use of any material in any affected facility described in (1)(a) above if the volatile content consists only of water and non-photochemically reactive solvent and the solvent comprises not more than twenty (20) percent of said volatile content by volume as applied;
 - 6. The use of equipment for which other requirements are specified by Sections 10, 19, or 20 of this regulation or which are exempt from air pollution control requirements by said sections.

(2) Definitions

As used in this section, all terms not defined herein shall have the meaning given them in 401 KAR 3:010 and Subsection 1(2) of this regulation.

- (a) "Affected Facility" means any article, machine, equipment or other contrivance used for employing or applying:
 - 1. Any organic solvent which is photochemically reactive or material containing such photochemically reactive solvent;
 - 2. Any organic solvent, regardless of photochemical reactivity, which is baked, heat-cured, or heat polymerized in the presence of oxygen.
- (b) "Organic materials" means chemical compounds of carbon excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides, metallic carbonates, and ammonium carbonate;
- (c) "Organic Solvents" means organic materials which are liquids at standard conditions and which are used as dissolvers, viscosity reducers, cleaning agents, diluents, or thinners, except that such materials which exhibit a boiling point higher than 220 degrees Fahrenheit at 0.5 millimeters mercury absolute pressure or having an equivalent vapor pressure shall not be considered to be solvents unless exposed to temperatures exceeding 220 degrees Fahrenheit;
- (d) "Photochemically Reactive Solvent" means any solvent with an aggregate of more than twenty (20) percent of its total volume composed of the chemical compounds classified below or which exceeds any of the following individual percentage composition limitations, referred to the total volume of solvent:
 - 1. A combination of hydrocarbons, alcohols, aldehydes, esters, ethers, or ketones having an olefinic or cyclo-olefinic type of unsaturation; five (5) percent;
 - 2. A combination of aromatic compounds with eight (8) or more carbon atoms to the molecule except ethylbenzene; eight (8) percent;
 - 3. A combination of ethylbenzene, ketones having branched hydrocarbon structures, trichloroethylene or toluene; twenty (20) percent;

When any organic solvent or any constituent of an organic solvent may be classified by its chemical structure into more than one of the above groups of organic compounds, it shall be considered as a member of the most reactive chemical group, that is, that group having the least allowable percent of the total volume of solvents.

(3) Standard for Organic Materials:

- (a) No person shall discharge into the open air, from any affected facility using organic solvents more than forty (40) pounds of organic materials in any one (1) day, nor more than eight (8) pounds in any one (1) hour unless said emissions have been reduced by at least eighty-five (85) percent by weight.
- (b) Those portions of any series of affected facilities designed for processing a continuous web, strip or wire which emit organic materials shall be taken collectively to determine compliance with this section. Emissions of organic materials resulting from air or heated drying of products for the first twelve (12) hours after their removal from an affected facility shall be included in determining compliance with this section. Further, emissions of hydrocarbons from the clean-up of an operation with organic solvent shall be included in determining compliance with this section. Emissions of organic materials to the atmosphere from the clean-up with photochemically reactive solvent of any affected facility shall be included with other emissions of organic materials from that affected facility for determining compliance with this section.
- (c) Emissions of organic materials into the atmosphere required to be controlled by Subsections 3(a) or 3(b) shall be reduced by:
 - 1. Incineration, provided that ninety (90) percent or more of the carbon in the organic material being incinerated is oxidized to carbon dioxide; or,
 - 2. Absorbing; or,
 - 3. Modifying processing procedures, equipment and/or materials in such a manner so as to achieve no less than the degree of control of photochemically reactive solvents required. The implementation of such modification in lieu of compliance with Subsections (3)(a) and (3)(b) should require the express prior approval of the department.

- (d) A person incinerating, absorbing, or otherwise processing organic materials pursuant to this section shall provide, properly install and maintain in calibration, in good working order and in operation, devices as specified in the permit to construct or the permit to operate, or as specified by the department, for indicating temperatures, pressures, rates of flow or other operating conditions necessary to determine the degree and effectiveness of air pollution control.
- (e) Any person using organic solvents or any material containing organic solvents shall supply the department, upon request and in the manner and form prescribed, written evidence of the chemical composition, physical properties and amount consumed for each organic solvent used.

(51.14) Section 16. Standards of Performance for Kraft (Sulfate) Pulp Mills

(1) Applicability

The provisions of this section shall apply to recovery furnaces, lime kilns, and dissolving smelt tanks, commenced on or after April 9, 1972, which are the affected facilities.

(2) Definitions

As used in this section, all terms not defined herein shall have the meaning given to them in 401 KAR 3:010 and Subsection 1(2) of this regulation.

- (a) "Total Reduced Sulfur (TRS)" means all reduced sulfur compounds including but not limited to hydrogen sulfide (H_2S).
- (3) Standard for Particulate Matter. No person shall cause, suffer, allow, or permit particulate emissions from any affected facility in excess of the following:
 - (a) Recovery Furnace : 2.3 pounds per ton of equivalent unbleached air dried pulp produced per hour.
 - (b) Lime Kilns : 1.0 pounds per ton of equivalent unbleached air dried pulp produced per hour.
 - (c) Dissolving Smelt Tanks : 0.5 pounds per ton of equivalent unbleached air dried pulp produced per hour.

(4) Standard for Total Reduced Sulfur (TRS)

- (a) No person shall cause, suffer, allow, or permit total reduced sulfur emissions from the recovery furnace of any affected facility in excess of an exit stack gas concentration of 15 parts per million by volume as a daily arithmetic average.
- (b) No person shall cause, allow, or permit total reduced sulfur emissions from the recovery furnace of any affected facility in excess of an exit stack gas concentration of forty (40) parts per million by volume for more than sixty (60) total minutes in any twenty-four (24) hour period.
- (c) No person shall cause, suffer, allow, or permit the emission of various noncondensable gas streams from digester relief, blow tank relief evaporator hot wells, or multiple effect evaporators containing total reduced sulfur in any affected facility unless treated by thermal oxidation or an equivalent method.
- (d) Control of other points of emission of total reduced sulfur, shall be considered on an individual basis as determined by the Department.

(51.14) Section 17. Standards of Performance for Sulfite Pulp Mills

(1) Applicability

The provision of this section shall apply to the total sulfite pulp mill commenced on or after April 9, 1972, which is the affected facility.

(2) Definitions

As used in this section, all terms not defined herein shall have the meaning given them in 401 KAR 3:010 and Subsection 1(2) of this regulation.

(3) Standards for Sulfur Oxides Emissions

No person shall cause or permit sulfur oxides emissions from blow pits, washer vents, storage tanks, digester relief, recovery system, etc., to exceed 9.0 lb. per air dried ton of pulp produced.

(51.15) Section 18. Standards of Performance for Ethylene Producing Plants

(1) Applicability

The provisions of this section shall apply to the waste gas streams of any ethylene producing plant commenced on or after April 9, 1972, which are the affected facilities.

(2) Definitions

As used in this section, all terms not defined herein shall have the meaning given them in 401 KAR 3:010 and in Subsection 1(2) of this regulation.

(3) Standard for Hydrocarbons

No person shall emit into the atmosphere a waste gas stream from any ethylene producing plant unless the waste gas stream is subjected to 1,300 degrees Fahrenheit for 0.3 seconds or greater in a direct-flame afterburner or equally effective catalytic vapor incinerator. Either device must be equipped with an indicating pyrometer which is positioned in the working area at the operators eye level.

(51.16) Section 19. Standards of Performance for Oil-Effluent Water Separators

(1) Applicability

The provisions of this section shall apply to any compartment of any vessel or device operated for the recovery of oil from effluent water which recovers 200 gallons a day or more of any petroleum products from any equipment which processes, refines, stores, or handles hydrocarbons with a Reid vapor pressure of 0.5 pounds or greater commenced on or after April 9, 1972, which is the affected facility. The provisions of this section shall not apply to any oil-effluent water separator used exclusively in conjunction with the production of crude oil, if the water fraction of the oil-water effluent entering the separator contains less than five (5) parts per million hydrogen sulfide, organic sulfide, or a combination thereof.

(2) Definitions

- (a) As used in this section, all terms not defined herein shall have the meaning given them in 401 KAR 3:010 and in Subsection 1(2) of this regulation.

(b) "Oil-Effluent Water Separator" means any tank, box, sump, or other container in which any petroleum or product thereof, floating on or entrained or contained in water entering such tank, box, sump or other container, is physically separated and removed from such water prior to outfall, drainage, or recovery of such water.

(3) Standard for Hydrocarbons

(a) The emissions of all hydrocarbon vapors and gases shall be reduced by at least ninety (90) percent by weight, except when gauging and sampling is taking place.

DEPARTMENT FOR NATURAL RESOURCES AND
ENVIRONMENTAL PROTECTION

Bureau of Environmental Quality
Division of Air Pollution

(2.0) 401 KAR 3:060

Standards of Performance for Existing Sources

(2.0) Section 1. General Provisions

(1) Applicability

Unless specifically defined in subsequent sections, the provisions of this regulation shall apply to the owner or operator of any source which contains any affected facility which was in being or under construction on or before April 9, 1972.

(2) Definitions

As used in this regulation, all terms not defined herein shall have the meaning given them in 401 KAR 3:010.

- (a) "Standard" means a standard of performance promulgated under this regulation.
- (b) "Source" means one or more affected facilities, which emits or may emit any air contaminant, contained within a given contiguous property line. The property shall be considered contiguous if separated only by a public thoroughfare, stream, or other right of way.
- (c) "Affected Facility" means, with respect to a source, any apparatus to which a standard is applicable.
- (d) "Owner or Operator" means any person who owns, leases, operates, controls, or supervises an affected facility or a source of which an affected facility is a part.
- (e) "Construction" means fabrication, erection, or installation of an affected facility.
- (f) "Hydrocarbon" means any organic compound consisting predominantly of carbon and hydrogen.
- (g) "Reference Method" means any method of sampling and analyzing for an air pollutant as prescribed by the United States Environmental Protection Agency regulation on Standards of Performance for New Stationary Sources (40 CFR 60).

- (h) "Equivalent Method" means any method of sampling and analyzing for an air pollutant which have been demonstrated to the United States Environmental Protection Agency's satisfaction to have a consistent and quantitatively known relationship to the reference method, under specified conditions.
- (i) "Alternative Method" means any method of sampling and analyzing for an air pollutant which is not a reference or equivalent method but which has been demonstrated to the United States Environmental Protection Agency's satisfaction to, in specific cases, produce results adequate for its determination of compliance.
- (j) "Particulate Matter" means any finely divided solid or liquid material, other than uncombined water, as measured by the reference method or an equivalent or alternative method.
- (k) "Run" means the net period of time during which an emission sample is collected. Unless otherwise specified, a run may be either intermittent or continuous within the limits of good engineering practice.

(3) Performance Test

- (a) 1. Within 120 days after completion a control plan at an affected facility and at such other times as may be required by the Department, the owner or operator of the affected facilities specified below shall conduct performance test(s) and furnish the Department a written report of the results of such performance test(s):
 - a. Process operation with a process weight rate of 100 tons per hour or more;
 - b. Indirect heat exchangers of more than 250 million BTU per hour heat input.
 - c. Incinerator with a charging rate of more than forty-five (45) metric tons per day (50 tons/day);
 - d. Portland cement plants;
 - e. Nitric acid plants;

- f. Sulfuric acid plants;
 - g. Asphalt concrete plants;
 - h. Petroleum refineries.
2. The Department may require the owner or operator of an affected facility not specified in Paragraph (a)1 of this subsection to conduct performance tests and furnish a written report of the results of such performance test(s), as required by this subsection.
- (b) Performance tests shall be conducted and data reduced in accordance with the test methods and procedures contained in each applicable section unless the Department:
- 1. Specifies or approves, the use of a reference method with minor changes in methodology;
 - 2. Approves the use of an equivalent method;
 - 3. Approves the use of an alternative method the results of which it has determined to be adequate for indicating whether a specific source is in compliance, or;
 - 4. Waives the requirement for performance tests because the owner or operator of a source has demonstrated to the Department's satisfaction that the affected facility is in compliance with the standard. Nothing in this paragraph shall be construed to abrogate the Department's authority to require testing under 401 KAR 3:010.
- (c) The owner or operator shall permit the Department to conduct performance tests at any reasonable time, shall cause the affected facility to be operated for purposes of such tests under such conditions as the Department may specify based on representative performance of the affected facility, and shall make available to the Department such records as may be necessary to determine such performance.
- (d) The owner or operator of an affected facility shall provide the Department ten (10) days prior notice of the performance test to afford the Department the opportunity to have an observer present.

(e) The owner or operator of an affected facility shall provide, or cause to be provided, performance testing facilities as follows:

1. Sampling ports adequate for test methods applicable to such facility;
2. Safe sampling platform(s);
3. Safe access to sampling platform(s);
4. Utilities for sampling and testing equipment.

(f) Each performance test shall consist of three (3) separate runs using the applicable test method. Each run shall be conducted for such time and under such conditions specified in the applicable standard. For the purpose of determining compliance with an applicable standard, the arithmetic mean of the results of the three (3) runs shall apply. In the event that a sample is accidentally lost or conditions occur in which one (1) of the three (3) runs must be discontinued because of forced shutdown, failure of an irreplaceable portion of the sample train, extreme meteorological conditions, or other circumstances, beyond the owner or operator's control, compliance may, upon the Department's approval, be determined using the arithmetic mean of the results of the two (2) other runs.

(4) Ambient Air Monitoring

Persons owning or operating any affected facility for which a standard is prescribed in this regulation when required by the Department shall install, use, and maintain ambient air monitoring equipment in accordance with methods prescribed in United States Environmental Protection Agency Regulations on National Primary and Secondary Ambient Air Quality Standards (40 CFR 50) and in such number and frequency prescribed by the Department, and shall make periodic ambient air monitoring reports at intervals prescribed by the Department.

(5) Compliance with standards and maintenance requirements.

(a) Compliance with standards in this regulation, other than opacity standards, shall be determined only by performance tests established by Subsection (3) of this section.

- (b) Compliance with opacity standards in this regulation shall be determined by conducting observations in accordance with the reference method as defined in Subsection 1 (2) (g). Opacity readings of portions of plumes which contain condensed, uncombined water vapor shall not be used for purposes of determining compliance with opacity standards. The results of continuous monitoring by transmissometer which indicate that the opacity at the time visual observations were made was not in excess of the standard are probative but not conclusive evidence of the actual opacity of an emission, provided that the source shall meet the burden of proving that the instrument used meets (at the time of the alleged violation), performance specification as required by the Department, has been properly maintained and (at the time of the alleged violation) calibrated, and that the resulting data have not been tampered with in any way.
- (c) The opacity standards set forth in this regulation shall apply at all times except during periods of startup, shutdown, malfunction, and as otherwise provided in the applicable standard.
- (d) At all times, including periods of startup, shutdown, and malfunction, owners and operations shall, to the extent practicable, maintain and operate any affected facility including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Department which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source.
- (e) 1. An owner or operator of an affected facility may request the Department to determine opacity of emissions from the affected facility during the initial performance tests required by Subsection (3) of this section.
2. Upon receipt from such owner or operator of the written report of the results of the performance tests required by Subsection (3) of the section, the Department will make a finding concerning compliance with opacity and other applicable

standards. If the Department finds that an affected facility is in compliance with all applicable standards for which performance tests are conducted in accordance with subsection (3) of this section, but during the time such performance tests are being conducted fails to meet any applicable opacity standard, the Department shall notify the owner or operator and advise it that it may petition the Department within ten (10) days of receipt of notification to make appropriate adjustment to the opacity standard for the affected facility.

3. The Department will grant such a petition upon a demonstration by the owner or operator that the affected facility and associated air pollution control equipment was operated and maintained in a manner to minimize the opacity of emissions during the performance tests; that the performance tests were performed under the conditions established by the Department; and that the affected facility and associated air pollution control equipment were incapable of being adjusted or operated to meet the applicable opacity standard.

(6) Circumvention

No owner or operator subject to the provisions of the regulation shall build, erect, install, or use any article, machine, equipment or process, the use of which conceals an emission which would otherwise constitute a violation of an applicable standard. Such concealment includes, but is not limited to, the use of gaseous diluents to achieve compliance with an opacity standard or with a standard which is based on the concentration of a pollutant in the gases discharged to the atmosphere.

(51.9) Section 2. Standards of Performance for Incinerators

(1) Applicability

The provisions of this section are applicable to each incinerator with a capacity of 2.5 cubic feet or greater, which is the affected facility, and which was in being or under construction before April 9, 1972.

(2) Definitions

As used in this section, all terms not defined herein

shall have the meaning given them in 401 KAR 3:010 and in Subsection 1(2) of this regulation.

- (a) "Incinerator" means any furnace and appurtenances thereto used in the process of burning waste for the primary purpose of removing the combustible matter from the waste;
- (b) "Teepee Burner" means a truncated, conical shaped metal structure designed to burn efficiently wood dust, shavings, chips and/or bark to an incombustible residue at a specified rate;
- (c) "Classification of Wastes" means the numerical type designation given to waste depending on its composition as follows:
 - 1. Type 0 - Trash, a mixture of highly combustible waste such as paper, cardboard, cartons, wood boxes, and combustible floor sweepings, from commercial and industrial activities. The mixtures contain up to ten (10) percent by weight of plastic bags, coated paper, laminated paper, treated corrugated cardboard, oily rags and plastic or rubber scraps. This type of waste contains ten (10) percent moisture, five (5) percent incombustible solids and has a heating value of 8500 BTU per pound as fired.
 - 2. Type 1 - Rubbish, a mixture of combustible waste such as paper, cardboard cartons, wood scrap, foliage and combustible floor sweepings, from domestic, commercial and industrial activities. The mixture contains up to twenty (20) percent by weight of restaurant or cafeteria waste, but contains little or no treated papers, plastic or rubber wastes. This type of waste contains twenty-five (25) percent moisture, ten (10) percent incombustible solids and has a heating value of 6500 BTU per pound as fired.
 - 3. Type 2 - Refuse consisting of an approximately even mixture of rubbish and garbage by weight. This type of waste is common to apartment and residential occupancy, consisting of up to fifty (50) percent moisture, seven (7) percent incombustible solids, and has a heating value of 4300 BTU per pound as fired.

4. Type 3 - Garbage, consisting of animal and vegetable wastes from restaurants, cafeterias, hotels, hospitals, laboratories, markets and like installations. This type of waste contains up to seventy (70) percent moisture, up to five (5) percent incombustible solids, and has a heating value of 2500 BTU per pound as fired.
 5. Type 4 - Human and animal remains, consisting of carcasses, organs and solid organic wastes from hospitals, laboratories, abattoirs, animal pounds, and similar sources, consisting of up to eighty-five (85) percent moisture, five (5) percent incombustible solids, and having a heating value of 1000 BTU per pound as fired.
 6. Type 5 - By-product waste, gaseous, liquid or semi-liquid, such as tar, paints, solvents, sludge, fumes, etc., from industrial operations. BTU values must be determined by the individual materials to be destroyed.
 7. Type 6 - Solid by-product waste, such as rubber, plastics, wood waste, etc., from industrial operations. BTU values must be determined by the individual materials to be destroyed.
- (d) "Auxiliary Fuel" means a substance burned in an incinerator to supply additional heat to attain temperature sufficiently high to dry and ignite waste and to maintain ignition of the waste but which is never in contact with the waste.

(3) Standard for Particulate Matter

- (a) No person shall cause, suffer, allow, or permit the emission produced by the incineration of any substance other than sawdust, wood chips, or bark which:
1. Is greater than twenty (20) percent opacity; or,
 2. Exceeds 0.20 grains of particulate matter per standard cubic foot of dry flue gas corrected to twelve (12) percent carbon dioxide excluding the contribution of carbon dioxide from auxiliary fuel.
- (b) No person shall cause, suffer, allow or permit the emission produced by the incineration of sawdust, wood chips, or bark which:

1. Is equal to or greater than forty (40) percent opacity, except that an emission equal to or greater than forty (40) percent opacity shall be permissible for not more than one (1) hour in any eight (8) hour period; or,
2. Exceeds 0.21 grains of particulate matter per standards cubic foot of dry flue gas corrected to twelve (12) percent carbon dioxide excluding the contribution of carbon dioxide from auxiliary fuel.

(4) Monitoring of Operations

The owner or operator of any incinerator of more than forty-five (45) metric tons per day charging rate (50 tons per day) subject to the provisions of this regulation shall record the daily charging rates and hours of operation.

(51.5) Section 3. Standards of Performance for Indirect Heat Exchangers

(51.6) (1) Applicability

The provisions of this section are applicable to each indirect heat exchanger of more than one (1) million BTU per hour heat input or of more than fifty (50) million BTU per hour heat input if natural gas, liquid petroleum gas, distillate fuel oil or combination of these as a main or standby fuel, is burned which is the affected facility. The standard for particulate matter is applicable to each affected facility which was in being or under construction before April 9, 1972. The standard for sulfur dioxide is applicable to each affected facility which was in being or under construction before the effective date of this regulation. The combined total heat input capacity of all affected facilities shall be used to determine the total allowable emissions from a source.

(2) Definitions

As used in this section, all terms not defined herein shall have the meaning given them in 401 KAR 3:010 and in Subsection 1(2) of this regulation.

- (a) "Fuel" means natural gas, petroleum, coal, wood, and any form of solid, liquid or gaseous fuel derived from such materials for the purpose of creating heat.

- (b) "Indirect Heat Exchanger" means any piece of equipment, apparatus or contrivance used for the combustion of fuel in which the energy produced is transferred to its point of usage through a medium that does not come in contact with or add to the products of combustion.

(3) Standard for Particulate Matter

- (a) No person shall cause, suffer, allow or permit the emission into the open air of particulate matter from any indirect heat exchanger in a region classified as Priority I with respect to particulate matter which is greater than twenty (20) percent opacity.
- (b) No person shall cause, suffer, allow or permit the emission into the open air of particulate matter from any indirect heat exchanger in a region classified as Priority II or Priority III with respect to particulate matter which is greater than forty (40) percent opacity.
- (c) The provisions of Subsections (1) and (2) shall not apply to:
 - 1. Emissions into the open air of particulate matter from any indirect heat exchanger during building a new fire, cleaning the fire box, or blowing soot, for a period or periods aggregating not more than:
 - a. Two (2) minutes in any sixty (60) minutes which is less than or equal to forty (40) percent opacity for indirect heat exchangers described in Subparagraph (a);

Six (6) minutes in any sixty (60) minutes which is less than or equal to sixty (60) percent opacity for indirect heat exchangers described in Subparagraph (b).
 - 2. During emergency conditions caused by an unavoidable breakdown provided the Department is notified promptly.
 - 3. Emissions from each waterwall indirect heat exchanger during startup operations.

(d) No person shall cause, suffer, allow or permit the emission of particulate matter from indirect heat exchangers if the particulate matter emitted exceeds the quantity specified in Table 1 which is incorporated as part of this regulation.

(e) Exceptions

The emission limitations contained in other subsections of this section shall not apply to those indirect heat exchangers which were in compliance prior to April 9, 1972 with, or have valid permits to operate within, the provisions of the previous Kentucky Air Pollution Control Commission Regulation No. 7 entitled "Prevention and Control of Emissions of Particulate Matter from Combustion of Fuel in Indirect Heat Exchangers." These sources shall comply with the emission limitations contained in that regulation.

TABLE 1
MAXIMUM PARTICULATE EMISSION RATES -
POUNDS PER MILLION BTU INPUT

MM BTU/Hour Heat Input	AIR QUALITY CONTROL REGION		
	Priority I	Priority II	Priority III
10 or less	0.56	0.75	0.80
50	0.38	0.52	0.57
100	0.33	0.44	0.49
250	0.26	0.35	0.34
500	0.22	0.30	0.34
1000	0.19	0.26	0.30
2500	0.15	0.21	0.24
5000	0.13	0.18	0.21
7500	0.12	0.16	0.19
10000 or more	0.11	0.15	0.18

Interpolation of allowable emissions for intermediate heat input values not specified in the table above may be accomplished by use of the equations shown below for the appropriate fuel and heat input range specified. In all equations X = millions of BTU per hour heat input and Y = allowable particulate emissions in pounds per million BTU heat input.

FACILITY AND PARTICULATE CLASSIFICATION	RANGE (MM BTU/Hour)	ALLOWABLE (Pounds/MM BTU)
Priority I	10 to 10,000	$Y = 0.9634 X^{-0.2356}$
Priority II	10 to 10,000	$Y = 1.2825 X^{-0.2330}$
Priority III	10 to 10,000	$Y = 1.3152 X^{-0.2159}$

(4) Standard for Sulfur Dioxide

- (a) The maximum allowable emission of sulfur dioxide from indirect heat exchangers shall be in accordance with a system of priorities as specified in paragraph (b) of this subsection. The classifications shall be delineated on a county basis. The maximum allowable emission for the various classes is specified in paragraph (d) of this subsection.
- (b) The class into which a given county falls has been determined by mathematical atmospheric diffusion models and other methods which evaluate those factors which necessitate limitations on sulfur dioxide emissions. These factors include but were not limited to:
 1. Total sulfur dioxide emissions;
 2. Spatial distribution of sulfur dioxide sources;
 3. Effects of single large sources;
 4. Existing measured air quality;
 5. Topographical features of the county;
 6. Contribution to background levels.
- (c) The following classifications will be effective upon the effective date of this regulation:
 1. Class I: Jefferson County, McCracken County;
 2. Class II: Bell County, Clark County, Woodford County;

3. Class III: Pulaski County;

4. Class IV: Muhlenberg County, Webster County, Hancock County;

5. Class V: All other counties.

- (d) No person shall cause, suffer, allow or permit the emission of sulfur dioxide into the open air from any existing indirect heat exchanger, in various counties if the sulfur dioxide emitted exceeds the quantity specified in Table 2 which is incorporated as part of this regulation.
- (e) When different fuels are burned simultaneously in any combination, the applicable standard shall be determined by proration using the following formula:

$$\text{Allowable SO}_2 \text{ emission, lb/MM BTU} = \frac{y(a) + z(b)}{y + z}$$

Where:

y is the percent of total heat input derived from liquid fuel;

z is the percent of total heat input derived from solid fuel;

a is the allowable sulfur dioxide emission in pounds per million BTU heat input derived from liquid fuel; and

b is the allowable sulfur dioxide emission in pounds per million BTU heat input derived from solid fuel.

- (f) Compliance shall be based on the total heat input from all fuels burned, including gaseous fuels.
- (g) Each affected facility not presently in compliance with this section shall submit a control plan and compliance schedule no later than January 1, 1976, with a final compliance date no later than July 1, 1977.

TABLE 2
ALLOWABLE SULFUR DIOXIDE EMISSIONS BASED ON HEAT INPUT CAPACITY

ALLOWABLE EMISSION POUND/MM BTU										
	COUNTIES CLASS I		COUNTIES CLASS II		COUNTIES CLASS III		COUNTIES CLASS IV		COUNTIES CLASS V	
	LIQUID	SOLID	LIQUID	SOLID	LIQUID	SOLID	LIQUID	SOLID	LIQUID	SOLID
10 or less	3.0	5	4.0	6.0	4.6	7.0	5.4	8.0	6.0	9.0
50	1.5	2.4	2.2	3.3	3.1	4.7	4.3	6.4	4.9	7.3
100	1.2	1.8	1.7	2.5	2.6	4.0	4.0	5.9	4.5	6.7
150	1.0	1.5	1.5	2.2	2.4	3.6	3.7	5.6	4.3	6.4
200	0.9	1.3	1.3	2.0	2.2	3.4	3.6	5.4	4.1	6.2
250 or greater	0.8	1.2	1.2	1.8	2.1	3.2	3.5	5.2	4.0	6.0

Interpolation of allowable emissions for rated capacity values between 10 and 250 million BTU heat input may be accomplished by use of the equations shown below for the appropriate fuel specified. In all equations Y = allowable sulfur dioxide emission in pounds per million BTU heat input and X = millions of BTU per hour heat input capacity rating.

COUNTY CLASS	FUEL ALLOWABLE (Pounds/MM BTU)
I	Liquid Y = 7.7223 X -0.4106
	Solid Y = 13.8781 X -0.4434
II	Liquid Y = 9.4644 X -0.3740
	Solid Y = 14.1967 X -0.3740
III	Liquid Y = 8.060 X -0.2436
	Solid Y = 12.2539 X -0.2432
IV	Liquid Y = 7.3639 X -0.1347
	Solid Y = 10.8875 X -0.1338
V	Liquid Y = 8.0189 X -0.1260
	Solid Y = 12.0284 X -0.1260

(4) Emission and Fuel Monitoring

- (a) There shall be installed, calibrated, maintained, and operated, in any indirect heat exchanger of more than 250 million BTU per hour heat input subject to the provisions of this section, emission monitoring instruments as follows:
 - 1. A photoelectric or other type smoke detector and recorder, except where gaseous fuel is the only fuel burned.
 - 2. An instrument for continuously monitoring and recording sulfur dioxide emissions, except where gaseous fuel is the only fuel burned, or where compliance is achieved through low sulfur fuels and representative sulfur analysis of fuels are conducted daily in accordance with Paragraph (c) or (d) of this subsection.
- (b) Instruments and sampling systems installed and used pursuant to this section shall be capable of monitoring emission levels within ± 20 percent with a confidence level of 95 percent and shall be calibrated in accordance with the method(s) prescribed by the manufacturer(s) of such instruments; instruments shall be subjected to manufacturers recommended zero adjustment and calibration procedures at least once per twenty-four (24) hour operating period unless the manufacturer(s) specifies or recommends calibration at shorter intervals, in which case such specifications or recommendations shall be followed. The applicable method specified by the Department shall be the reference method.
- (c) The sulfur content of solid fuels, as burned, shall be determined in accordance with the methods specified by the Department.
- (d) The sulfur content of liquid fuels, as burned, shall be determined in accordance with the methods specified by the Department.
- (e) The rate of fuel burned for each fuel shall be measured daily or at shorter intervals and recorded. The heating value and ash content of fuels shall be ascertained at least once per week and recorded. Where the steam generating unit is used to generate

electricity, the average electrical output and the minimum and maximum hourly generation rate shall be measured and recorded daily.

- (f) The owner or operator of any indirect heat exchanger of more than 250 million BTU per hour heat input subject to the provisions of this section shall maintain a file of all measurements required by this regulation. Appropriate measurements shall be reduced to the units of the applicable standard daily, and summarized monthly. The record of any such measurement(s) and summary shall be retained for at least two (2) years following the date of such measurements and summaries.
- (g) The Department may require for any indirect heat exchanger of less than 250 million BTU per hour heat input any or all the emission and fuel monitoring required by this subsection.
- (h) A source may elect, with approval from the Department, to perform periodic source sampling in lieu of installing continuous emission monitoring instruments. In no case shall the frequency of sampling be less than once per calendar quarter. (This section is disapproved in that emission limits prescribed for Boyd County are not adequate.)

(50.1.1) Section 4. Standards of Performance for Process Operations

(1) Applicability

The provisions of this section shall apply to each process operation not otherwise regulated by other sections of this regulation and which was in being or under construction before the effective date of this regulation.

(2) Definitions

As used in this section, all terms not defined herein shall have the meaning given them in 401 KAR 3:010 and in Subsection 1(2) of this regulation.

- (a) "Process Operation" means any method, form, action, operation or treatment of manufacturing or processing, and shall include any storage or handling of materials or products, before, during, or after manufacturing or processing;

- (b) "Process Weight" means the total weight of all materials introduced into any affected facility which may cause any emission of particulate matter, but does not include liquid and gaseous fuels charged, combustion air, or uncombined water.
- (c) "Process Weight Rate" means a rate established as follows:
 - 1. For continuous or long-run steady state operations, the total process weight for the entire period of continuous operation or for a typical portion thereof, divided by the number of hours of such period or portion thereof;
 - 2. For cyclical or batch unit operations, or unit processes, the total process weight for a period that covers a complete operation or an integral number of cycles, divided by the hours of actual process operation during such a period.

Where the nature of any process operation or the design of any equipment is such as to permit more than one interpretation of this definition, the interpretation which results in the minimum value for allowable emission shall apply.

- (d) "Affected Facility" as related to process operations means the last operation preceding the emission of air contaminants which results:
 - 1. In the separation of the air contaminant from the process materials; or,
 - 2. In the conversion of the process materials into the air contaminants, but does not include an air pollution abatement operation.

(3) Standard for Particulate Matter

- (a) No person shall cause, suffer, allow or permit the emission into the open air of particulate matter from affected facility, or from all air pollution control equipment installed on any affected facility which:
 - 1. Is equal to or greater than forty (40) percent opacity; or

2. Is in excess of the quantity specified in Table 3 of this regulation.

(b) An affected facility may elect to substitute the following standards in lieu of the value given in Table 3:

1. A maximum exit particulate emission concentration of 0.02 grains per standard cubic foot; and
2. Air Pollution control equipment of at least ninety-seven (97) percent actual efficiency;
3. Addition of dilution air shall not constitute compliance

(51.14) Section 5. Standards of Performance for Kraft (Sulfate) Pulp Mills

(1) Applicability

The provisions of this section shall apply to recovery furnaces, lime kilns, and dissolving smelt tanks which were in being or under construction before April 9, 1972.

(2) Definitions

- (a) As used in this section, all terms not defined herein shall have the meaning given to them in 401 KAR 3:010 and in Subsection 1(2) of this regulation.
- (b) "Total Reduced Sulfur (TRS)" means all reduced sulfur compounds including but not limited to hydrogen sulfide (H_2S), methyl mercaptan, dimethyl sulfide and dimethyl disulfide expressed in terms of hydrogen sulfide (H_2S).

(3) Standard for Particulate Matter

No person shall cause, suffer, allow, or permit particulate emissions from existing equipment of any kraft pulp mill in excess of the following:

- (a) Recovery Furnace : 3.5 pounds per ton of equivalent unbleached air dried pulp produced per hour

- (b) Lime Kilns : 1.0 pounds per ton of equivalent unbleached air dried pulp produced per hour
- (c) Dissolving Smelt Tanks : 0.5 pounds per ton of equivalent unbleached air dried pulp produced per hour

(4) Standard for Total Reduced Sulfur (TRS)

- (a) No person shall cause, suffer, allow, or permit total reduced sulfur emissions from the recovery furnace of any kraft pulp mill in excess of exit stack gas concentration of fifteen (15) parts per million by volume as a daily arithmetic average.
- (b) No person shall cause, allow, or permit total reduced sulfur emissions from the recovery furnace of any kraft pulp mill in excess of exit stack gas concentration of forty (40) parts per million by volume for more than sixty (60) total minutes in any twenty-four (24) hour period.
- (c) No person shall cause, suffer, allow, or permit the emission of various noncondensable gas streams from digester relief, blow tank relief evaporator hot wells, or multiple effect evaporators containing total reduced sulfur in a kraft pulp mill unless treated by thermal oxidation or an equivalent method with ninety-eight (98) percent efficiency.
- (d) Control of other points of emission of total reduced sulfur, shall be considered on an individual basis as determined by the Departments.

TABLE 3
ALLOWABLE RATE OF PARTICULATE EMISSION
BASED ON PROCESS WEIGHT

PROCESS WEIGHT RATE		MAXIMUM ALLOWABLE EMISSION RATE
Lb/Hr.	Tons/Hr.	Lb/Hr.
100 or less	0.05 or less	0.551
200	0.10	0.877
400	0.20	1.40
600	0.30	1.83
800	0.40	2.22
1,000	0.50	2.58
1,500	0.75	3.38
2,000	1.00	4.10
2,500	1.25	4.76
3,000	1.50	5.38
3,500	1.75	5.96
4,000	2.00	6.52
5,000	2.50	7.58
6,000	3.00	8.56
7,000	3.50	9.49
8,000	4.00	10.4
9,000	4.50	11.2
10,000	5.00	12.0
12,000	6.00	13.6
16,000	8.00	16.5
18,000	9.00	17.9
20,000	10.00	19.2
30,000	15.00	25.2
40,000	20.00	30.5
50,000	25.00	35.4
50,000	30.00	40.0
70,000	35.00	41.3
80,000	40.00	42.5
90,000	45.00	43.6
100,000	50.00	44.6
120,000	60.00	46.3
140,000	70.00	47.8
160,000	80.00	49.1
200,000	100.00	51.3
1,000,000	500.00	69.0
2,000,000	1,000.00	77.6
6,000,000	3,000.00	92.7

Interpolation of the data for process weight rates up to 60,000 lb/hr. shall be accomplished by use of the equation $E = 4.10 P^{0.67}$ and interpolation and extrapolation of the data for process weight rates in excess of 60,000 lb/hr. shall be accomplished by use of the equation $E = 55.0 P^{0.11} - 40$, where E = rate of emission in lb/hr. and P = process weight rate in tons/hr.

(51.14) Section 6. Standards of Performance for Sulfite Pulp Mills

(1) Applicability

The provisions of this section shall apply to the total sulfite pulp mill which was in being or under construction before April 1972.

(2) Definitions

As used in this section, all terms not defined herein shall have the meaning given them in 401 KAR 3:010 and in subsection 1(2) of this regulation.

(3) Standard for Sulfur Oxides Emissions

No person shall cause or permit sulfur oxides emissions from blow pits, washer vents, storage tanks, digester relief, recovery system, etc., to exceed 9.0 lb. per air dried ton of pulp produced.

(51.18) Section 7. Standards of Performance for Sulfuric Acid Plants

(1) Applicability

The provisions of this section shall apply to existing installations of sulfuric acid plants which were in being or under construction before April 9, 1972.

(2) Definitions

As used in this section, all terms not defined herein shall have the meaning given them in 401 KAR 3:010 and in Subsection 1(2) of this regulation.

(3) Standard for Particulate Matter

No person shall cause, suffer, allow, or permit the following emission into the open air:

- (a) Sulfuric acid mist in the effluent in excess of 0.90 pound per ton of acid (100%) produced;
- (b) A visible emission which is greater than twenty (20) percent opacity.

(4) Standard for Sulfur Dioxide

No person shall cause, suffer, allow or permit the following emission into the open air: sulfur dioxide in

the effluent in excess of 27.6 pounds per ton of acid (100%) produced.

(5) Emission Monitoring

- (a) There shall be installed, calibrated, maintained, and operated, in any sulfuric acid production unit subject to the provisions of this section, an instrument for continuously monitoring and recording emissions of sulfur dioxide.
- (b) The instrument and sampling system installed and used pursuant to this subsection shall be demonstrated to be capable of monitoring emission levels within ± 20 percent with a confidence level of 95 percent through comparison with an appropriate wet test method, and shall be calibrated in accordance with the method(s) prescribed by the manufacturer(s) of such instrument, the instrument shall be subject to manufacturers recommended zero adjustment calibration procedures at least once per twenty-four (24) hour operating period unless the manufacturer(s) specifies or recommends calibration at shorter intervals, in which case such specifications or recommendations shall be followed. The applicable method specified by the Department shall be the reference method.
- (c) Production rate and hours of operation shall be recorded daily.
- (d) The owner or operator of a sulfuric acid plant subject to the provisions of this section shall maintain a file of all measurements required by the regulation. Appropriate measurements shall be reduced to the units of the applicable standard daily, and summarized monthly. The record of any such measurement(s) and summary shall be retained for at least two (2) years following the date of such measurements and summaries.

(51.15) Section 8. Standards of Performance for Process Gas Streams

(1) Applicability

The provisions of this section shall apply to petroleum refineries, by-produce coke plants, and any other process, located in a region classified as Priority I with respect

to sulfur dioxide and which were in being or under construction before April 9, 1972.

(2) Definitions

As used in this section, all terms not defined herein shall have the meaning given them in 401 KAR 3:010 and in Subsection 1(2) of this regulation

(3) Standard for Hydrogen Sulfide

No person shall cause, suffer, allow or permit the emission of H_2S in a process gas stream to exceed ten (10) grains per 100 cubic feet of gas.

(4) Standard for Sulfur Dioxide

No person shall cause, suffer, allow, or permit the emission of sulfur dioxide in a process gas stream to exceed 2000 parts per million by volume.

(51.15) Section 9. Standards of Performance for Ethylene Producing Plants

(1) Applicability

The provisions of this section shall apply to the waste gas streams of ethylene producing plants which were in being or under construction before April 9, 1972, and which are located in a region classified as Priority I with respect to photochemical oxidants (and hydrocarbons).

(2) Definitions

As used in this section, all terms not defined herein shall have the meaning given them in 401 KAR 3:010 and in Subsection 1(2) of this regulation.

(3) Standard for Hydrocarbons

No person shall emit into the atmosphere a waste gas stream from any ethylene producing plant unless the waste gas stream is subjected to 1,300 degrees Fahrenheit for 0.3 seconds or greater in a direct-flame afterburner or equally effective catalytic vapor incinerator. Either device must be equipped with an indicating pyrometer which is positioned in the working area at the operators eye level.

(51.16) Section 10. Standards of Performance for Oil-Effluent Water Separators

(1) Applicability

The provisions of this section shall apply to any compartment of any vessel or device operated for the recovery of oil from effluent water which recovers 200 gallons a day or more of any petroleum products from any equipment which processes, refines, stores, or handles hydrocarbons with a Reid vapor pressure of 0.5 pounds or greater which is located in a region classified as Priority I with respect to photochemical oxidants (and hydrocarbons) and which was in being or under construction before April 9, 1972. The provisions of this section shall not apply to any oil-effluent water separator used exclusively in conjunction with the production of crude oil, if the water fraction of the oil-water effluent entering the separator contains less than five (5) parts per million hydrogen sulfide, organic sulfides, or a combination thereof.

(2) Definitions

As used in this section, all terms not defined herein shall have the meaning given them in 401 KAR 3:010 and in Subsection 1(2) of the regulation.

- (a) "Oil-Effluent Water Separator" means any tank, box, sump or other container in which any petroleum or product thereof, floating on or entrained or contained in water entering such tank, box, sump or other container, is physically separated and removed from such water prior to outfall, drainage, or recovery of such water.

(3) Standard for Hydrocarbons

The emissions of all hydrocarbon vapors and gases shall be reduced by at least ninety (90) percent by weight, except when gauging and sampling is taking place.

(51.16) Section 11. Standards of Performance for Storage Vessels for Petroleum Liquids

(1) Applicability

- (a) Except as provided in Paragraph (b) of this subsection, the affected facility to which this section applies is each storage vessel for petroleum liquids which has a storage capacity greater than 40,000

gallons located in a region classified Priority I with respect to photochemical oxidants (hydrocarbons) and which was in being or under construction before the effective date of this regulation.

- (b) This section does not apply to storage vessels for the crude petroleum or condensate stored, processed, and/or treated at a drilling and production facility prior to custody transfer.
- (c) Those storage vessels for petroleum liquids with a storage capacity greater than 500 gallons but less than 40,000 gallons shall be equipped with a permanent submerged fill pipe or vapor recovery system.

(2) Definitions

As used in this section, all terms not defined herein shall have the meaning given them in 401 KAR 3:010 and in Subsection 1 (2) of this regulation.

- (a) "Storage Vessel" means any tank, reservoir, or container used for the storage of petroleum liquids, but does not include:
 - 1. Pressure vessels which are designed to operate in excess of fifteen (15) pounds per square inch gauge without emissions to the atmosphere except under emergency conditions.
 - 2. Subsurface caverns or porous rock reservoirs, or
 - 3. Underground tanks if the total volume of petroleum liquids added to and taken from a tank annually does not exceed twice the volume of the tank.
- (b) "Petroleum Liquids" means crude petroleum, condensate, and any finished or intermediate product manufactured in a petroleum refinery but does not mean Number 2 through Number 6 fuel oils, gas turbine fuel oils, or diesel fuel oils.
- (c) "Petroleum Refinery" means any facility engaged in producing gasoline, kerosene, distillate fuel oils, residual fuel oils, lubricants, or other products through distillation of petroleum or through redistillation, cracking, or reforming of unfinished petroleum derivatives.

- (d) "Crude Petroleum" means a naturally occurring mixture which consists of hydrocarbons and/or sulfur, nitrogen and/or oxygen derivatives of hydrocarbons and which is a liquid at standard conditions.
- (e) "Condensate" means hydrocarbon liquid separated from natural gas which condenses due to changes in the temperature and/or pressure and remains liquid at standard conditions.
- (f) "Custody Transfer" means the transfer of produced crude petroleum and/or condensate, after processing and/or treating the producing operations, from storage tanks or automatic transfer facilities to pipelines or any other forms of transportation.
- (g) "Drilling and Production Facility" means all drilling and servicing equipment, wells, flow lines, separators, equipment, gathering lines, and auxiliary non-transportation-related equipment used in the production of crude petroleum but does not include natural gas plants.
- (h) "True Vapor Pressure" means the equilibrium partial pressure exerted by a petroleum liquid as determined in accordance with methods described by the Department.
- (i) "Floating Roof" means a storage vessel cover consisting of a double deck, pontoon single deck, internal floating cover or covered floating roof, which rests upon and is supported by the petroleum liquid being contained, and is equipped with a closure seal or seals to close the space between the roof edge and tank wall.
- (j) "Vapor Recovery System" means a vapor gathering system capable of collecting all hydrocarbon vapors and gases discharged from the storage vessels and a vapor disposal system capable of processing such hydrocarbon vapors and gases so as to prevent their emission to the atmosphere.
- (k) "Reid Vapor Pressure" is the absolute vapor pressure of volatile crude oil and volatile non-viscous petroleum liquids, except liquified petroleum gases, as determined by methods specified by the Department.

- (1) "Submerge Fill Pipe" means any fill pipe the discharge of which is entirely submerged when the liquid level is six (6) inches above the bottom of the tank; or when applied to a tank which is loaded from the side, shall mean any fill pipe the discharge opening of which is entirely submerged when the liquid level is two times the fill pipe diameter above the bottom of the tank.

- (3) Standard for Hydrocarbons

The owner or operator of any storage vessel to which this section applies shall store petroleum liquids as follows:

- (a) If the true vapor pressure of the petroleum liquid, as stored, is equal to or greater than 78 mm (1.5 psia), the storage vessel shall be equipped with a floating roof, a vapor recovery system, or their equivalents.
- (b) If the true vapor pressure of the petroleum liquid as stored is greater than 570 mm Hg (11.1 psia), the storage vessel shall be equipped with a vapor recovery system or its equivalent.

(51.16) Section 12. Standards of Performance for Petroleum Liquids Loading Facilities

- (1) Applicability

The provisions of this section shall apply to loading facilities which load more than 20,000 gallons per day of petroleum liquids into tank trucks, trailers, or railroad tank cars and are located in a region classified as Priority I with respect to photochemical oxidants (hydrocarbons) and which were in being or under construction before April 9, 1972.

- (2) Definitions

As used in this section, all terms not defined herein shall have the meaning given them in 401 KAR 3:010 and in Subsection 1(2) of this regulation.

- (a) "Petroleum Liquids" means crude petroleum, condensate, and any finished or intermediate products manufactured in a petroleum refinery but does not mean Number 2 through Number 6 fuel oils, gas turbine fuel oils, or diesel fuel oils.

- (b) "Petroleum Refinery" means any facility engaged in producing gasoline, kerosene, distillate fuel oils, residual fuel oils, lubricants, or other products through distillation of petroleum or through redistillation, cracking, or reforming of unfinished petroleum derivatives.

(3) Standard for Hydrocarbons

- (a) No owner or operator of any loading facility shall load petroleum liquids unless such facility is equipped with a device which reduces the emissions of all hydrocarbon vapors and gases by at least ninety (90) percent by weight, properly installed, in good working order and in operation.
- (b) Loading shall be accomplished in such a manner that all displaced vapor and air will be vented only to the vapor collection system. Measures shall be taken to prevent liquid drainage from the loading device when it is not in use or to accomplish complete drainage before the loading device is disconnected.

(51.21) Section 13. Standards of Performance for Sources Using Organic Solvents

(1) Applicability

- (a) The provisions of this section shall apply to any affected facility using any organic solvents which was in being or under construction before April 9, 1972, and which is located in a region classified Priority I with respect to photochemical oxidants (hydrocarbons).
- (b) The provisions of this section shall not apply to:
 - 1. The manufacture of organic solvents or the transport, loading, or storage of organic solvents or materials containing organic solvents;
 - 2. The spraying or other employment of insecticides, pesticides, or herbicides;
 - 3. The employment, application, evaporation or drying of saturated halogenated hydrocarbons or perchlorethylene;

4. The use of any material, in any affected facility described in (1)(a) above if [:] the volatile content consists of non-photochemically reactive solvent comprising not more than thirty (30) percent by volum of the material as applied;
5. The use of any material in any affected facility described in (1)(a) above if the volatile content consists only of water and non-photochemically reactive solvent and that solvent comprises not more than twenty (20) percent of said volatile content by volume as applied.
6. The use of equipment for which other requirements are specified by Section 10, 11, or 12 of this regulation or which are exempt from air pollution control requirements by said sections.

(2) Definitions

As used in this section, all terms not defined herein shall have the meaning given them in 401 KAR 3:010 and Subsection 1(2) of the regulation.

- (a) "Affected Facility" means any article, machine, equipment, or other contrivance used for employing or applying:
 1. Any organic solvent which is photochemically reactive or material containing such photochemically reactive solvent; or
 2. Any organic solvent, regardless of photochemical reactivity, which is baked, heat-cured, or heat polymerized in the presence of oxygen.
- (b) "Organic Materials" means chemical compounds of carbon excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides, and ammonium carbonate;
- (c) "Organic Solvents" means organic materials which are liquids at standard conditions and which are used as dissolvers, viscosity reducers, cleaning agents, diluents, or thinners, except that such materials which exhibit a boiling point higher than 220 degree Fahrenheit at 0.5 millimeters mercury absolute pressure or having an equivalent vapor pressure shall not be considered to be solvents unless exposed to temperatures exceeding 220 degree Fahrenheit;

(d) "Photochemically Reactive Solvent" means any solvent with an aggregate of more than twenty (20) percent of its total volume composed of the chemical compounds classified below or which exceeds any of the following individual percentage composition limitations, referred to the total volume of solvent;

1. A combination of hydrocarbons, alcohols, aldehydes, esters, ethers, or ketones having an olefinic or cyclo-olefinic type of unsaturation; five (5) percent;
2. A combination of aromatic compounds with eight (8) or more carbon atoms to the molecule except ethylbenzene; eight (8) percent;
3. A combination of ethylbenzene, ketones having branched hydrocarbon structures, trichloroethylene or toluene; twenty (20) percent.

When any organic solvent or any constituent of an organic solvent may be classified by its chemical structure into more than one of the above groups of organic compounds it shall be considered as a member of the most reactive chemical group, that is, that group having the least allowable percent of the total volume of solvents.

(3) Standard for Organic Materials

- (a) No person shall discharge into the open air, from any affected facility using organic solvents more than forty (40) pounds of organic material in any one (1) day, nor eight (8) pounds in any one (1) hour unless said emissions have been reduced by at least eighty-five (85) percent by weight.
- (b) Those portions of any series of affected facilities designed for processing a continuous web, strip or wire which emit organic materials shall be taken collectively to determine compliance with this section. Emissions of organic materials resulting from air or heated drying of products for the first twelve (12) hours after their removal from an affected facility shall be included in determining compliance with this section. Further, emissions of organic material to the atmosphere from the clean-up with photochemically reactive solvent of any

affected facility shall be included with other emissions of organic materials from that affected facility for determining compliance with this section.

- (c) Emissions of organic materials into the atmosphere required to be controlled by Subsections 3(a) or 3(b) shall be reduced by:
 - 1. Incineration, provided that ninety (90) percent or more of the carbon in the organic material being incinerated is oxidized to carbon dioxide; or,
 - 2. Absorption; or
 - 3. Modifying processing procedures, equipment and/or materials in such a manner so as to achieve no less than the degree of control of photochemically reactive solvents required. The implementation of such modifications in lieu of compliance with Subsection (3)(a) and (3)(b) shall require the express prior approval of the Department.
- (d) A person incinerating, absorbing, or otherwise processing organic materials pursuant to this section shall provide, properly install and maintain in calibration, in good working order and in operation, devices as specified in the permit to construct or the permit to operate, or as specified by the Department, for indicating temperatures, pressures, rates of flow or other operating conditions necessary to determine the degree and effectiveness of air pollution control.
- (e) Any person using organic solvents or any material containing organic solvents shall supply the Department, upon request and in the manner and form prescribed, written evidence of the chemical composition, physical properties and amount consumed for each organic solvent used.

(50.1) Section 14. Control of Fugitive Emissions

(1) Definitions

As used in this section, all terms not defined herein shall have the meaning given them in 401 KAR 3:010 and Subsection 1(2) of this regulation.

- (a) "Fugitive Particulate Matter" means any particulate matter which is emitted into the open air from points other than a stack outlet.
- (b) "Open Air" means the air outside buildings, structures, and equipment.

(2) Standard for Particulate Matter

- (a) On and after the effective date of this regulation, no person shall cause, suffer, allow, or permit any materials to be handled, transported, or stored; or a building, its appurtenances to be constructed, altered, repaired or demolished or a road to be used without taking reasonable precautions to prevent particulate matter from becoming airborne. Such reasonable precautions shall include, where applicable, but not be limited to the following:
 - 1. Use, where possible, of water or chemicals for control of dust in the demolition of existing buildings or structures, construction operations, the grading of roads or the clearing of land;
 - 2. Application and maintenance of asphalt, oil, water, or suitable chemicals on roads, materials stockpiles, and other surfaces which can create airborne dusts;
 - 3. Installation and use of hoods, fans, and fabric filters to enclose and vent the handling of dusty materials, or the use of water sprays or other measures to suppress the dust emissions during handling. Adequate containment methods shall be employed during sandblasting or other similar operations;
 - 4. Covering, at all times when in motion, open bodied trucks transporting materials likely to become airborne;
 - 5. Conduct of agricultural practices such as tilling of land, application of fertilizers, etc., in such manner as to not create a nuisance to others residing in the area;
 - 6. The maintenance of paved roadways in a clean condition;

7. The prompt removal of earth or other material from a paved street which earth or other material has been transported there to by trucking or earth moving equipment or erosion by water.
- (b) No person shall cause or permit the discharge of visible fugitive dust emissions beyond the lot line of the property on which the emissions originate.
- (c) When dust, fumes, gases, mist, odorous matter, vapors, or any combination thereof escape from a building or equipment in such a manner and amounts as to cause a nuisance or to violate any regulation, the Secretary may order that the building or equipment in which processing, handling and storage are done be tightly closed and ventilated in such a way that all air and gases and air or gas-borne material leaving the building or equipment are treated by removal or destruction of air contaminants before discharge to the open air.

(51.13) Section 15. Control of Open Burning

(1) Definitions

As used in this section, all terms not defined herein shall have the meaning given them in 401 KAR 3:010 and Subsection 1(2) of this regulation.

- (a) "Open Burning" means the burning of any matter in such a manner that the products of combustion resulting from the burning are emitted directly into the ambient air without passing through a stack or chimney;
- (b) "Garbage" means putrescible animal and vegetable matter accumulated by a family in residence in the course of ordinary day to day living;
- (c) "Household Rubbish" means waste material and trash, not to include garbage, normally accumulated by a family in a residence in the course of ordinary day to day living.

(2) Prohibition of Open Burning

- (a) On and after the effective date of this regulation, no person shall cause, suffer, allow or maintain any open fire except as follows:

1. Fires for the cooking of food for human consumption on other than commercial premises;
2. Fires for recreational or ceremonial purposes;
3. Small fires set by construction and other workers for comfort heating purposes providing objectionable smoke is not created;
4. Fires set for the purposes of weed abatement, disease, and pest prevention;
5. Fires set for prevention of a fire hazard, including the disposal of dangerous materials where no safe alternate is available;
6. Fires set for the purpose of bona fide instruction and training of public and industrial employees in the methods of fighting fires;
7. Fires set for recognized agricultural, silvicultural, range, and wildlife management practices;
8. Fires set by individual home owners for burning of leaves except in cities greater than 8,000 population located in a Priority I Region;
9. Fires for disposal of household rubbish, not to include garbage, originating at dwelling of five family units or less, which fires are maintained by an occupant of the dwelling at the dwelling, except in cities greater than 8,000 population located in a Priority I Region;
10. Flare stacks for the combustion of waste gases provided that such stacks be equipped with smokeless tips;
11. Fires set for the purposes of disposing of accidental spills or leaks of crude oil, petroleum products or other organic materials, and the disposal of absorbent material used in their removal, where no other economically feasible means of disposal is available and practical and provided permission is obtained from the Department prior to burning;

12. Fires set for disposal of natural growth for land clearing and trees and tree limbs felled by storms, provided that no extraneous material such as tires or heavy oil which tend to produce dense smoke are used to cause ignition or aid combustion and that burning is done on sunny days with mild winds. In regions classified Priority I with respect to particulate matter, the emissions from such fires shall not be equal to or greater than forty (40) percent opacity.

(b) The open burning specified in Paragraph (a) of this subsection is permitted only if it does not conflict with local ordinance. Where necessary, permission shall be obtained from the fire department and fire district having jurisdiction at the place of burning.

(51.10) Section 16. Standard of Performance for Nitric Acid Plants

(1) Applicability

The provisions of this section shall apply to any nitric acid plant in being or under construction before April 9, 1972; which is the affected facility.

(2) Definitions

As used in this section, all terms not defined herein shall have the meaning given them in 401 KAR 3:010 and in Section 1(2) of this regulation.

(a) "Nitric Acid Production Unit" means any facility producing weak nitric acid by either the pressure or atmospheric pressure process.

(b) "Weak Acid Production Unit" means acid which is thirty (30) to seventy (70) percent in strength.

(3) Standard for Nitrogen Oxides

On and after the date on which the performance test required to be conducted by Section 1 (3) of this regulation is completed, no owner or operator subject to the provisions of this regulation shall cause to be discharged into the atmosphere from any affected facility any gases which:

(a) Contain nitrogen oxides, expressed as NO₂, in excess of 2.9 kg per metric ton of acid produced (5.8 lb.

per ton), the production being expressed as 100 percent nitric acid.

- (b) Exhibit ten (10) percent opacity, or greater. Where the presence of uncombined water is the only reason for failure to meet the requirements of this paragraph, such failure will not be a violation of this section.

(4) Emission Monitoring

- (a) There shall be installed, calibrated, maintained, and operated, in any nitric acid production unit subject to the provisions of this section, an instrument for continuously monitoring and recording emissions of nitrogen oxides.
- (b) The instrument and sampling system installed and used pursuant to this subsection shall be capable of monitoring emission levels with + 20 percent with a confidence level of ninety-five (95) percent and shall be calibrated in accordance with the method(s) prescribed by the manufacturer(s) of such instrument, the instrument shall be subjected to manufacturers recommended zero adjustment and calibration procedures at least once per twenty-four (24) hour operating period unless the manufacturer(s) specifies or recommends calibration at shorter intervals, in which case such specifications or recommendations shall be followed. The applicable method specified by the Department shall be the reference method.
- (c) Production rate and hours of operation shall be recorded daily.

(5) Test Methods and Procedures

- (a) The reference methods specified by the Department, except as provided for in Section 1(3)(b) of this regulation, shall be used to determine compliance with the standard prescribed in Subsection (3) of this section.
- (b) The sampling point shall be the centroid of the stack or duct or at a point no closer to the walls than 1 m (3.28 ft.). Each run shall consist of at least four (4) grab samples taken at approximately fifteen (15) minute intervals. The arithmetic mean of the samples shall constitute the run value. A velocity traverse shall be performed once per run.

- (c) Acid production rate, expressed in metric tons per hour of 100 percent nitric acid, shall be determined during each testing period by suitable methods and shall be confirmed by a material balance over the production system.
- (d) For each run, nitrogen oxides, expressed in g/metric ton of 100 percent nitric acid, shall be determined by dividing the emission rate in g/hr by the acid production rate. The emission rate shall be determined by the equation,

$$\text{g/hr} = Q_s \times c$$

where:

Q_s = volumetric flow rate of the effluent in dscm/hr,

and

c = NO_x concentration in g/dscm.

CHAPTER IV
CONTROL STRATEGY

(50.1)
(50.2)

SULFUR OXIDES AND PARTICULATE MATTER

(2.0) 4.0 BACKGROUND

4.0.1 General

The Commonwealth of Kentucky submitted to the EPA Administrator an implementation plan on February 8, 1972. This plan contained a chapter such as this entitled "Control Strategy, Sulfur Oxides and Particulate Matter" which was based on computations made by the former Kentucky Air Pollution Control Commission and the Environmental Protection Agency. The plan was approved by the EPA's Administrator of May 31, 1972.

On June 28, 1973, a decision of the U.S. Court of Appeals for the Sixth Circuit in the Case of "Buckeye Power Company, et al v. Environmental Protection Agency", 481 F. 2 d 162, and two related cases, vacated the Administrator's approval of the Kentucky plan and remanded the case to the Environmental Protection Agency for compliance with Section 553 of the Administrative Procedures Act, viz., to take comments, data, or other evidence from interested parties, and to express the basis for administrative actions.

Consequently, on December 5, 1973, the Commonwealth of Kentucky resubmitted to the Administrator the Kentucky Implementation Plan with one addition, AP-11 relating to the control of indirect sources.

On August 15, 1974, the plan was approved by the EPA Administrator with one exception, namely, section 1 (b) of Kentucky Air Pollution Regulation AP-1 as related to Alternate Control Strategy provision of the plan. This provision was disapproved as failing to meet the requirements of 40 CFR 51.12. The two-year extension originally granted for achieving primary sulfur dioxide standards in the Louisville Interstate AQCR was reaffirmed.

In his approval of the plan, the Administrator of the Environmental Protection Agency encouraged the Commonwealth of Kentucky to re-examine its sulfur dioxide strategy to determine if it can be modified without jeopardizing the attainment and maintenance of national standards. Since the supply of low sulfur fuels is currently limited, the Administrator, in accordance with the Environmental Protection Agency's Clean Fuel Policy, subsequently

invited the Commonwealth of Kentucky to re-examine the effects of its sulfur oxide regulations to determine whether less stringent limits might not, in certain portions of the State, adequately attain primary ambient air quality standards.

In compliance with this request, the Commonwealth of Kentucky with the assistance of EPA Region IV, Air Programs Office in Atlanta, Georgia, developed new strategies to provide the basis for regulation revisions that will reduce emissions to levels that allow ambient air quality to meet national primary standards and, at the same time, minimize the technical and economic burden to all concerned.

This revised chapter presents justification for the regulation revision.

4.0.2 Control Strategy

An emission control strategy consists of a set of compatible emission standards. Each standard limits emission from specific types of operations, e.g., fuel combustion, industrial process, or solid waste disposal, and the combination of the several standards included within each strategy defines the allowable emission levels from each source in an air quality control region or a county within a State.

The "example region" concept was used in the original plan for strategy development for the control of sulfur oxides and particulates. The Louisville AQCR was used as an example region. The use of this concept in 1971 is one of the primary causes of "over-kill" in the old regulations. This new revision did not use this concept in developing the strategy for sulfur dioxide; instead explicit control strategy testing was performed for each region and pollutant affected by this revision. Since no revision was proposed for particulate matter control strategy the original concept was retained as a method of demonstration.

The alternate control strategy which was provided by the old regulations and was disapproved by EPA's Administrator was removed from the revised regulations.

(50.2) 4.1 SULFUR DIOXIDE

4.1.1 Procedure

Standards for control of sulfur dioxide were for the most part formulated on an industry-by-industry basis. Fuel burning operations represented the largest single source of sulfur dioxide; consequently, these operations have been given the most attention. Other SO₂ limiting regulations were not substantially changed.

Standards normally take the form of either a limitation on the allowable sulfur content of the fuel burned, or a limitation of the pounds of sulfur dioxide which can be emitted per million BTUs of heat input value of fuel. The Commonwealth of Kentucky has selected the latter type of standard to allow the use of the high sulfur coal mined in Western Kentucky and to lend to the installation of flue gas desulfurization units were necessary to meet the ambient air quality standards.

Strategies based on the limitation of sulfur dioxide emissions were applied using mathematical diffusion modeling techniques to demonstrate the attainment and maintenance of the ambient air quality standards. These techniques are as follows:

- (1) 24-Hour Power Plant Model
- (2) Air Quality Display Model

The 24-hour model was used on individual power plants to determine their required emission to meet the 24-hour ambient air quality standards of 365/ $\mu\text{g}/\text{m}^3$ (0.14 ppm). The second model was used to define the allowable emission rates from multiple sources in an area where these sources' emissions might lead to a violation of the annual ambient air quality standard of 80 $\mu\text{g}/\text{m}^3$ (0.4 ppm). This was deemed to be necessary for only a small number of areas, based on the density of these fuel burning operations. The more restrictive results of the two models (annual or short-term) would be the determining factor for selecting the emission standard in a region, county or a group of counties where the impact of these plants was determined to occur.

Modeling was done by the staff of EPA Region IV, the Walden Research Corporation under EPA contract, and the staff of the Division of Air Pollution, Kentucky State Department for Natural Resources and Environmental Protection.

- (1) Nominal Load Case - This presents the maximum concentration calculated by the model based upon normal operating rate.

- (2) Maximum Load Case - This case was calculated assuming the plant to be operating at full capacity during the day.

Ground-level concentrations arising from nominal and maximum operating loads can be expected to differ due to the joint effect of changes in emission rates, with corresponding changes in stack gas exit velocity and temperature. The interaction of these factors can produce higher concentrations under either nominal or maximum load conditions. Modeling of both cases permits a reasonable estimate of the range of possible values and identification of the maximum concentration case. Regulation changes are based on the highest predicted concentration, whether from nominal or maximum case.

A brief description of the diffusion modeling methodology used is included in this section. It should be noted that the control strategies were developed in accordance with the requirements given in EPA's regulation of 40 CFR Part 51.12 and 51.13.

4.1.1.1 24-Hour Power Plant Model (also referred to as CRS-1)

The model used to estimate the short-term concentration is one developed by the Meteorology Laboratory, EPA. This model is designed to estimate concentrations due to sources at a single location for averaging times of 1 hour, 24 hours and 1 year, with emphasis on the 24-hour value.

The model is a Gaussian plume model using diffusion coefficients based on Turner¹. Concentrations are estimated for each hour of the year based on the wind direction (in increments of ten degrees), wind speed, mixing height, and Pasquill stability class. For the 1 and 24-hour values, it is assumed that the pollutant does not "decay" significantly between the source and the receptors because of the short travel involved. Also, decay depends on a number of meteorological variables and might well be insignificant when the meteorological conditions occur which lead to highest sulfur dioxide concentrations.

Meteorological data for 1964 were used. The reasons for this choice are:

- (1) Data from earlier years did not have sufficient resolution in the wind direction, and

¹Turner, D.B., "Workbook of Atmospheric Dispersion Estimates", U.S. Department of Health, Education and Welfare, PHS Publication No. 999-AP-26 (rev. 1970).

- (2) data from subsequent years are readily available on magnetic tape for every third hour only.

Mixing height data were obtained from the twice-a-day upper air observations made at the nearest upper air station. Hourly mixing heights were estimated by the model using an objective interpolation scheme.

To simulate the effect of elevated terrain in the vicinity of the plant sites, a ground plume displacement procedure was used in the modeling analysis. This procedure consists of adjusting (decreasing) the effective height of the plant stacks by an amount equal to the difference in elevation between the plant site and the average surrounding terrain. The "reduced" stack height is input to the diffusion model described above.

When a power plant is located in a valley, a modification of the 24-hour model, the valley model, was applied. The model estimates the ground level concentration at 112 receptors at the intersection of 16 radials 22.5° apart and 7 concentric circles at equal distances from the center of emission points. The model uses a class average wind speed of 2.5 m/sec and a slightly stable atmospheric condition (Class E). These conditions being representative to a valley situation. At night in rural situations, the model assumes that a stable atmosphere exists upward from ground level. The primary assumption invoked is that a given meteorological condition exists for 6 hours of a 24-hour period during which a particular source can affect a particular receptor.

Since only power plant operations were being modeled, it was not possible, in general, to calibrate the model using measured air quality data. The calculated values of concentration are considered to be reasonable estimates of anticipated concentrations using best available modeling techniques.

Where interactions between a number of stacks of a power plant are significant, supplementary calculations, using a modified Model (PTMTP-W), account for the impact of two or more stacks.

4.1.1.2 Air Quality Display Model (AQDM)

The AQDM, a climatological model based on ideas of Martin and Tikvart, (TRW Systems Group, 1969; Martin and Tikvart, 1968; and Martin, 1971), considers the joint frequency distribution of wind direction to 16 points, wind speed in 6 classes, and stability categories in 5 classes. Computation for a receptor point are made by considering the contribution of each point and area source to this receptor. Separate calculations are made

for each speed class/stability class combination for wind direction sector about the receptor that contains the source. For area sources a modification of the virtual point source method is used. Estimation of area source heights are assumed to be the effective height of the area source. The effective heights can be different for each area source. Briggs' plume rise equation (Briggs, 1969) were used to estimate the effective height of point sources.

The Louisville Interstate Air Quality Control Region was modeled using the AWD Model. Due to the existence of single major sources in the other areas of the State running AQDM for these areas were found to be unnecessary and reliance on only the 24-hour model was sufficient.

4.1.1.3 Source Data

Data for sources modeled were taken from the emissions inventory listing of 1972 conducted by the Division of Air Pollution and 1973 emissions inventory of Jefferson County (Appendix A to this Plan). Supplementary data for the large power plants were taken directly from the Federal Power Commission (FPC Form 67) and the data submitted by individual plants as part of the requirements of Section 114 of the Clean Air Act. In all cases of 24-hour modeling the actual emission was used to work out a ratio of reduction necessary to meet the $365 \mu\text{g}/\text{m}^3$ standard. AWD Model run for the Louisville region was run using 1973 data.

For purposes of this study, data were projected to 1977, to include scheduled units coming on line since generally is the target year for attainment of at least the primary air quality standards for sulfur dioxide. The planned units are Louisville Gas and Electric Mill Creek Unit # 4 in Jefferson County, Cincinnati Gas and Electric East Bend Unit in Boone County, and Kentucky Utilities Ghent Unit # 2 in Carroll County.

4.1.1.4 Measured Ambient Background Levels

A survey of existing ambient air quality data throughout the State was made to determine the appropriate background level, 24-hour maximum, to use in the 24-hour modeling of individual power plants. This background represents the effect of all sources on the monitoring station in the vicinity of the plant in question after elimination of the direct influence of that plant on the monitoring station. The technique used in this case is through examining the meteorological data of the nearest weather station and the resultant wind direction was determined for each sampling day. The measured data at the sampling day was ignored if the resultant wind during that day was within a

section of $+110^\circ$ of a line drawn between the power plant in question and the monitoring station. The remaining data, which represent the influence of the remaining sources were examined and the record highest 24-hour average was used as the background applicable for the plant in question. These levels are shown in Table 4.4.

In the case where measured air monitoring data were not available, a background of $50 \mu\text{g}/\text{m}^3$ was considered to be appropriate.

The background level used for an annual mean for the AQDM was selected to be $0 \mu\text{g}/\text{m}^3$.

4.1.1.5 Classification of Counties

The class into which a given county falls has been determined by mathematical atmospheric diffusion models and other methods which evaluate those factors which necessitate limits on sulfur dioxide emissions. These factors include but were not limited to:

- (1) Total sulfur dioxide emissions;
- (2) Spatial distribution of sulfur dioxide sources;
- (3) Effects of single large sources;
- (4) Existing measured air quality;
- (5) Topographical features of the county;
- (6) Contribution to background levels.

4.1.2 Adopted Changes

The changes in SO_2 emission limitations are primarily relaxations on indirect heat exchangers of all size ranges, especially those burning solid fuels. Emission limitations for small oil-fired boilers or for large oil-fired boilers which remained in less restrictive counties have been relaxed slightly.

The old regulations are shown in Table 4.1 and the new regulations are shown in Table 4.2.

TABLE 4.1

PREVIOUS REGULATION OF ALLOWABLE SULFUR DIOXIDE EMISSIONS
FROM INDIRECT HEAT EXCHANGERS AND
PRIORITY CLASSIFICATION OF AIR QUALITY CONTROL REGIONS

MM BTU/HOUR HEAT INPUT	EXISTING INSTALLATIONS					
	PRIORITY I		PRIORITY II		PRIORITY III	
	(fuel:)	Liquid	Solid	Liquid	Solid	Liquid
10 or less	2.50	4.0	2.5	4.0	2.50	4.0
50	1.41	2.2	2.02	3.0	2.32	3.8
100	1.11	1.7	1.85	2.7	2.24	3.7
150	0.96	1.5	1.75	2.5	2.20	3.7
250	0.8	1.2	1.64	2.3	2.14	3.6
500	0.8	1.2	1.5	2.0	2.07	3.6
1,000	0.8	1.2	1.5	2.0	2.00	3.5
10,000	0.8	1.2	1.5	2.0	2.00	3.5

TABLE 4.2
REGULATIONS IN EFFECT (JULY 2, 1975) OF ALLOWABLE SULFUR DIOXIDE EMISSION
BASED ON HEAT INPUT CAPACITY FOR EXISTING INDIRECT HEAT EXCHANGERS AND NEW FACILITIES

MM BTU/HOUR HEAT INPUT	(Fuel:)	ALLOWABLE EMISSION POUNDS/MM BTU									
		NEW FACILITIES AND COUNTIES CLASS I		COUNTIES CLASS II		COUNTIES CLASS III		COUNTIES CLASS IV		COUNTIES CLASS V	
		Liquid	Solid	Liquid	Solid	Liquid	Solid	Liquid	Solid	Liquid	Solid
10 or less		3.0	5.0	4.0	6.0	4.6	7.0	5.4	5.0	6.0	9.0
50		1.5	2.4	2.2	3.3	3.1	4.7	4.3	6.4	4.9	7.3
100		1.2	1.8	1.7	2.5	2.6	4.0	4.0	5.9	4.3	6.7
150		1.0	1.5	1.5	2.2	2.4	3.6	3.7	5.6	4.3	6.4
200		0.9	1.3	1.3	2.0	2.2	3.4	3.6	5.4	4.1	6.2
250 or greater		0.8	1.2	1.2	1.8	2.1	3.2	3.5	5.2	4.0	6.0

Interpolation of allowable emissions for rated capacity values between 10 and 250 million BTU heat input may be accomplished by use of the equations shown below for the appropriate fuel specified. In all equations Y = allowable sulfur dioxide emission in pounds per million BTU heat input and X = millions of BTU per hour heat input capacity rating.

COUNTY CLASS	LIQUID FUEL		SOLID FUEL	
New and I	$Y = 7.7223 X$	-0.4106	$Y = 13.8781 X$	-0.4474
II	$Y = 9.4044 X$	-0.3740	$Y = 14.1967 X$	-0.3740
III	$Y = 8.060 X$	-0.2346	$Y = 12.2539 X$	-0.2432
IV	$Y = 7.3610 X$	-0.1347	$Y = 10.8875 X$	-0.1338
V	$Y = 8.0187 X$	-0.1240	$Y = 12.0254 X$	-0.1260

4.1.3 Analysis

Detailed modeling results are retained by this agency for examination by the EPA Administrator. It should be emphasized here that the regulations were applied in these models, based on individual boiler input capacity rather than the combined capacity of the source, which the regulations allow. Consequently, the results of the analysis were conservative figures.

4.1.3.1 Class I Counties

The analysis for these two counties (Jefferson and McCracken) consists of 24-hour models run on all power plants (except small industrial units) and an AQDM run for Louisville Interstate AQCR. The 24-hour model showed, that the emissions limitations for Class I counties are adequate to attain the ambient air quality 24-hour standard.

The AQDM correlation curves resulting from modeling the 1973 emissions inventory and calibrated with the 1973 air quality data is shown in Figure 4.1. Isopleths showing air quality conditions existing in 1973 are presented in Figure 4.2. Isopleths showing estimated air quality levels following application of emission standards are presented in Figure 4.3. It can be seen that the annual arithmetic mean standard of 80 ug/m^3 was attained through the application of the control regulations.

4.1.3.2 Class II Counties

The analysis for these 3 counties (Bell, Clark, Woodford) consists of 24-hour runs around 3 major sources. The lack of other major SO_2 sources negated the need for AQDM runs. The plants are all located in rugged terrain; therefore stringent limitations are required in spite of the relatively small sizes of the plants and the absence of multiple source interactions.

While the absolute value of the modeling result, Table 4.3, does not equate to the exact emission limitation in all cases, it was chosen for the following reasons:

- (1) The sources affected by the limitation had, in most cases, prior to regulation development, located and contracted for coal which meets this new limitation. Lower sulfur fuel would be difficult to obtain and would provide little additional emission reduction benefit.

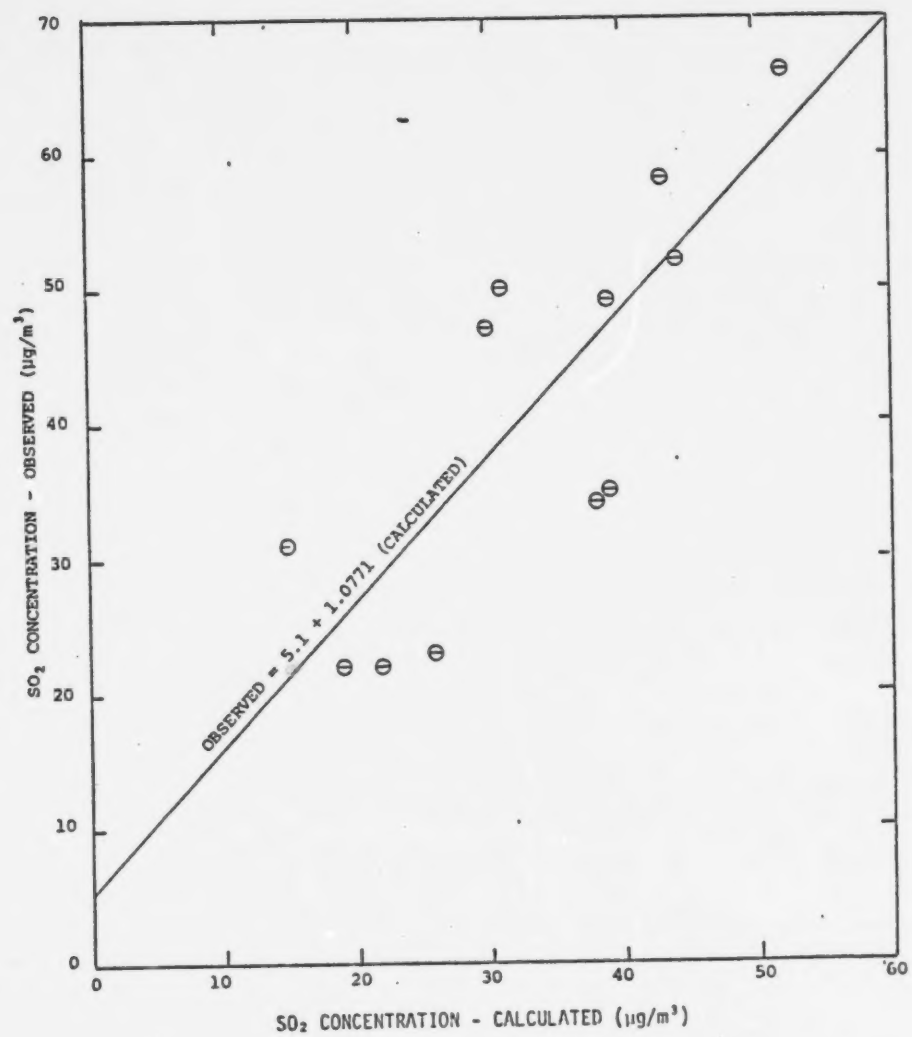


FIGURE 4.1 - SULFUR DIOXIDE CORRELATION CURVE

LOUISVILLE INTERSTATE Air Quality Control Region

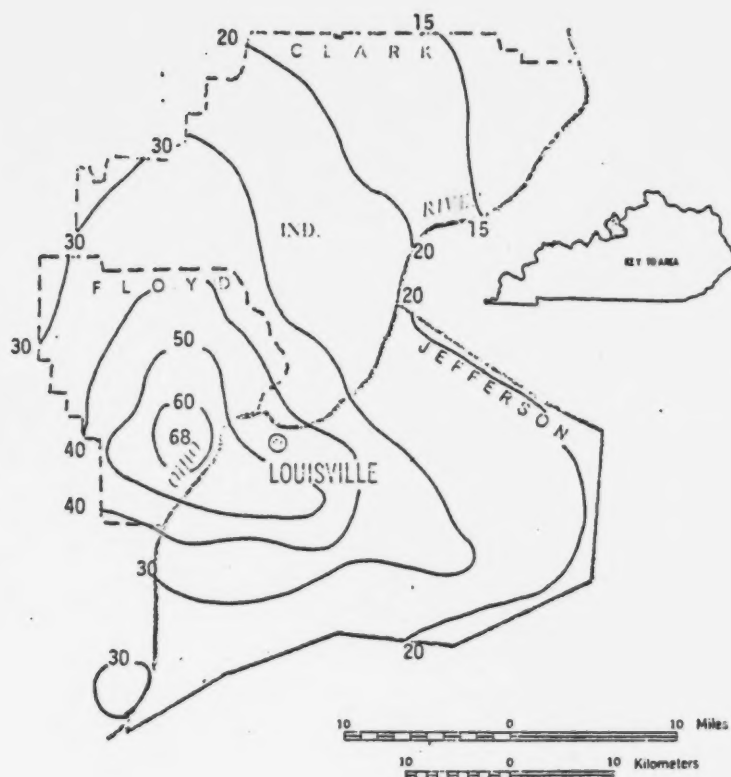


FIGURE 4.2 ANNUAL ARITHMETIC CONCENTRATIONS
OF SULFUR DIOXIDE IN THE LOUISVILLE INTERSTATE AQCR
AS ESTIMATED BY THE DIFFUSION MODEL (EXISTING CONDITIONS 1973)

LOUISVILLE INTERSTATE Air Quality Control Region

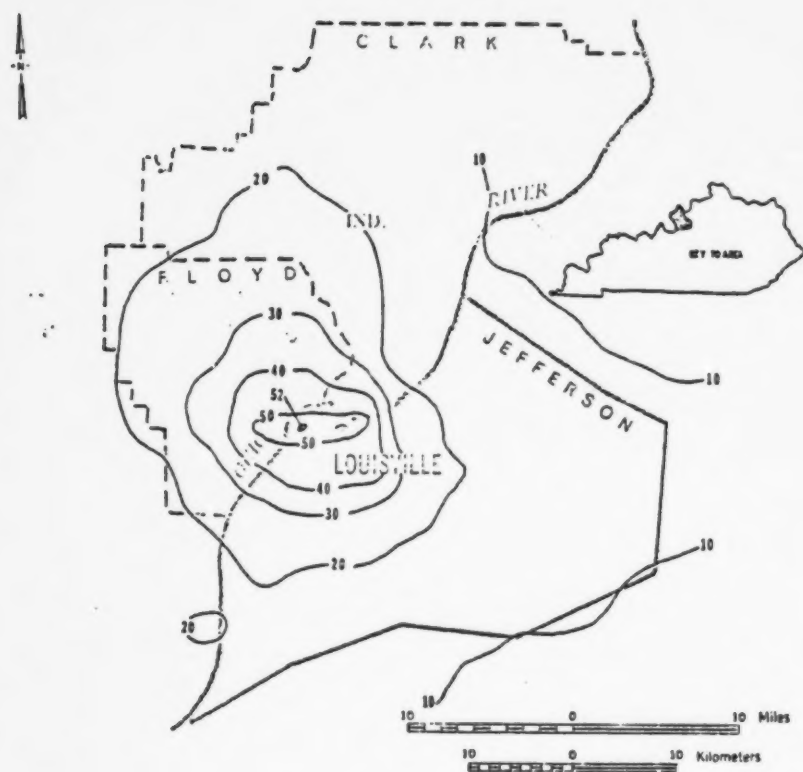


FIGURE 4.3 ANNUAL ARITHMETIC MEAN CONCENTRATIONS OF SULFUR DIOXIDE
IN THE LOUISVILLE INTERSTATE A.Q.C.R AS ESTIMATED BY THE DIFFUSION MODEL
(AFTER THE APPLICATION OF CONTROL REGULATIONS JULY 1977)

TABLE 4.3
RESULTS OF 24-HOUR MODELING IN MAJOR POWER PLANT IN KENTUCKY (250 MM BTU/HR AND OVER)

CLASS	COUNTY	PLANT	BACKGROUND ug/m ³	REQUIRED LB SO ₂ / MM BTU TO MEET 24-HOUR, STANDARD	ADOPTED EMISSION STANDARD 1b. SO ₂ /MM BTU
I	Jefferson*	Paddy's Run Cane Run Mill Creek Shawnee	127	2.7	1.2
			112	1.8	
			75	5.5	
			70	1.5	
II	McCracken	Tyrone Dale Pineville	20	1.9	1.8
			34	1.0	
			50	0.4	
III	Pulaski	Cooper	39	3.2	3.2
IV	Webster Muhlenburg	Robert Reid Green River Paradise Coleman	50	5.2	5.2
			25	5.2	
			25	5.1	
			45	5.0	
V	Davies Henderson Mercer Carroll Lawrence All Others	Owensboro M.U. Elmer Smith Henderson Brown Ghent Big Sandy	55	8.6	6
			64	6.6	
			67	6.0	
			20	7.0	
			65	19	
			22	25	

*AQDM also run

- (2) The emission limitation is not substantially greater than the commonly accepted best technology available for power plants of the size and age of those in question.
- (3) The bulk of the generating capacity in these 3 counties is used primarily for peaking and/or emergency purposes.

4.1.3.3 Class III County

The analysis for this county (Pulaski) consisted of a 24-hour run for the single point source in the county. The model shows, Table 4.3, that the ambient standard will be met where the emission standard is applied. No other quantitative analysis was deemed necessary, due to the absence of other large sources or multiple source interaction.

4.1.3.4 Class IV Counties

The analysis of these 3 counties (Muhlenburg, Webster, and Hancock) consisted of point source runs for 4 point sources for 24-hour violations. These showed, Table 4.3, that no violations will occur upon the application of the adopted emission standard. No other quantitative analysis was deemed necessary, due to the absence of other large sources or multiple source interactions.

4.1.3.5 Class V Counties

The analysis for the remaining counties consists of 24-hour point source runs for major SO₂ emitters and AQDMs for 1 area where major SO₂ sources are in close proximity to one another and/or multiple smaller SO₂ sources, or where multiple smaller SO₂ sources are numerous enough to justify concern. Sparsely populated counties or those with no substantial SO₂ emitters were not modeled. All ambient standards were found to be met by the adopted emission limitations (Table 4.3 and AQDM result).

4.1.4 General Comments

Air quality data for Calendar Year 1974 (submitted as an update to Appendix B) shows SO₂ violations only in two areas. Both of these are in the vicinity of plants which will be required to reduce emissions below current practice (Jefferson and McCracken, the two Class I counties). The revised regulations are expected to achieve ambient standards in all parts of the State.

Those counties not listed specifically in Table 4.3 have shown no SO₂ violations for short or long-term standards. Additionally, the absence of either large or concentrated SO₂ emitters makes

the absence of either large or concentrated SO₂ emitters makes it apparent that no danger of violations presently exist.

If in time, it becomes apparent that a different level of control is compatible with attainment and maintenance of the ambient standards, the Department will so study the situation and revise its control strategy.

4.1.5 Sulfur Compounds From Processes

Sulfur dioxide emission limitations exist for four other categories of sources. These were not appreciably changed but they are listed below, Table 4.4, for information and reference purposes.

TABLE 4.4
SULFUR COMPOUNDS LIMITATIONS FOR PROCESSES

SOURCE CATEGORY	OLD REGULATION	NEW REGULATION
Sulfate pulp mills	.5 #TRS/ton of pulp or 17.5 ppm, whichever is more restrictive	15.0 ppm TRS daily average plus 40 ppm for 60 min. in 24-hr. period, plus 98% control in non-condensibles
Sulfite pulp mills	9.0 #SO ₂ /ton of pulp	9.0 #SO ₂ /ton of pulp
Sulfuric acid plant	27 #SO ₂ /ton of 98% acid or 27.55 #SO ₂ /ton of 100% acid, plus .9 # acid mist/ton of 98% acid	27.6 #SO ₂ /ton of 100% acid, plus .9 # acid mist/ton of 100% acid
Process gases	in Priority I AQCRs 10 grams H ₂ S/100 ft ³ , plus 2000 ppm SO ₂ , in stack gases	in Priority I AQCRs 10 grams H ₂ S/100 ft ³ , plus 2000 ppm SO ₂ , in stack gases

In as much as no changes occurred, the example region concept is still adequate to indicate no ambient violations from these sources. Problems from these sources could occur through two circumstances. Proximity to other major sources could cause violations, but no monitoring or multiple sources modeling

indicates this. These sources could cause violations through growth, but it is assumed that NSPA, State permitting procedures, and AQMA regulations should prevent this. Therefore, the in-depth analysis used for source types with relaxed emission limitations was not performed for these sources.

(50.1) 4.2

PARTICULATE MATTER

No revision was made to the regulations covering the emission of particulate matter except for process weight table for new sources which was made slightly more stringent. Therefore, the control strategy presented in the original SIP is still applicable in attaining the National Standards for Particulate Matter. Consequently the following sections were extracted and copied from the original plan.

4.2.1 Procedure

Air Quality Display Model was used for the Louisville Interstate Air Quality Control Region for testing and control strategy for Priority I regions.

4.2.1.1 Model Verification

The use of measured ambient pollution data is an essential step in the simulation process. The model verification, calibration, or validation compares model estimates of pollutant concentration with actual measured values. Several potential errors in the atmospheric transport and diffusion calculations may be examined and systematically accounted for by this procedure. The pollutant emission inventory can be examined for consistency with air quality measurements and topographic conditions peculiar to the air quality region may be evaluated.

The correlation curve resulting from the model run is shown in Figure 4.1. Two lines are shown on the correlation plot.

On the particulate matter plot, along with the least squares line, is a line which is force-fitted through $y = 35$. This force-fit line is considered reasonable since the concentration of 35 ug/m^3 is being used as the background concentration throughout the eastern United States. On this plot two points were omitted as follows: Point No. 15 was affected to an excessive degree by the Indiana Army Arsenal and Point No. 14, located in Jeffersonville, Indiana, and having a value of 202 ug/m^3 , was considered too high for that area since the larger particulate emitters are in Kentucky. It appears that, even taking into consideration the prevailing south-westerly wind, the highest

reading should be in Kentucky. The 202 ug/m^3 value is not consistent with particulate source locations.

The force-fit correlation curves were used as input for the strategy runs.

4.2.1.2 Null Condition

Isopleths showing the air quality conditions existing in 1970 are shown in Figure 4.2 for particulates. The null run revealed two hot spots in the region for particulate matter. The hot spots (174 ug/m^3 and 166 ug/m^3) show a large influence from American Standard Company and area sources.

4.2.2 Control Strategies Applied

Particulate control strategy using Kentucky's and Indiana's regulations was applied for particulate matter. Kentucky's regulations are contained in Chapter 7 of this plan.

The standards applied in this strategy are shown in Table 4.5. Area source fuel burning emissions were calculated using a factor of 117 pounds emission per ton of coal burned. The regulation allows only about 14 pounds per ton. Therefore, an 85% reduction was assumed for area sources.

An isopleth map showing the air quality resulting from applying Kentucky's and Indiana's regulations is shown in Figure 4.3

The hot spot, 69 ug/m^3 arithmetic mean, may be neglected due to the close proximity of the receptor to the Louisville Refinery. Consequently, the annual geometric mean of 60 ug/m^3 for particulate is achieved in all areas of the region which should assure the attainment of 150 ug/m^3 twenty-four hour secondary standard.

(2.0) 4.3 AIR QUALITY DATA

Updated air quality data for 1972 through 1974 for sulfur dioxide and data for 1970 for particulate matter in the nine air quality control regions are submitted in Appendix B.

(2.0) 4.4 EMISSIONS INVENTORY

Tables representing the 1970 emission inventory data with respect to particulates and an updated 1972 and 1973 emissions data for sulfur oxides are presented in Appendix A to this Plan. A dash mark (-) in the emission inventory tables represents negligible emissions of less than 0.5 tons per year as opposed to zero (0) in which case no emissions were calculated.

TABLE 4.5

LOUISVILLE INTERSTATE AIR QUALITY CONTROL REGION
PARTICULATE MATTER CONTROL REGULATIONS

A. Kentucky1. Fuel Combustion

The following table applied to the control of particulate matter from the combustion of fuels:

Total Heat Input (10 ⁶ BTU/Hr)	Maximum Wt. Discharge (Lb/10 ⁶ BTU)
10 or less	.56
10,000 or more	.11

For heat inputs between these values, use log-log interpolation.

2. Industrial Process

The following table applies to the control of particulate matter from industrial processes:

Process Weight Rate (Lb/Hr)	Maximum Wt. Discharge (Lb/Hr)
100	.551
60,000	40.0
6,000,000	92.7

For process weight rates between these values, use log-log interpolation.

3. Solid Waste

The allowable emission rate is 0.2 grains per SCF for incinerators. Emission from open burning is zero.

Table 4.5 (continued)

B. Indiana

1. Fuel Combustion

The allowable emission rate is $0.8 \text{ lb}/10^6$ BTU heat input.

2. Industrial Process

Same as Kentucky.

3. Solid Waste

The allowable emission is $0.4 \text{ lb}/1000 \text{ lb}$ per hour of refuse.

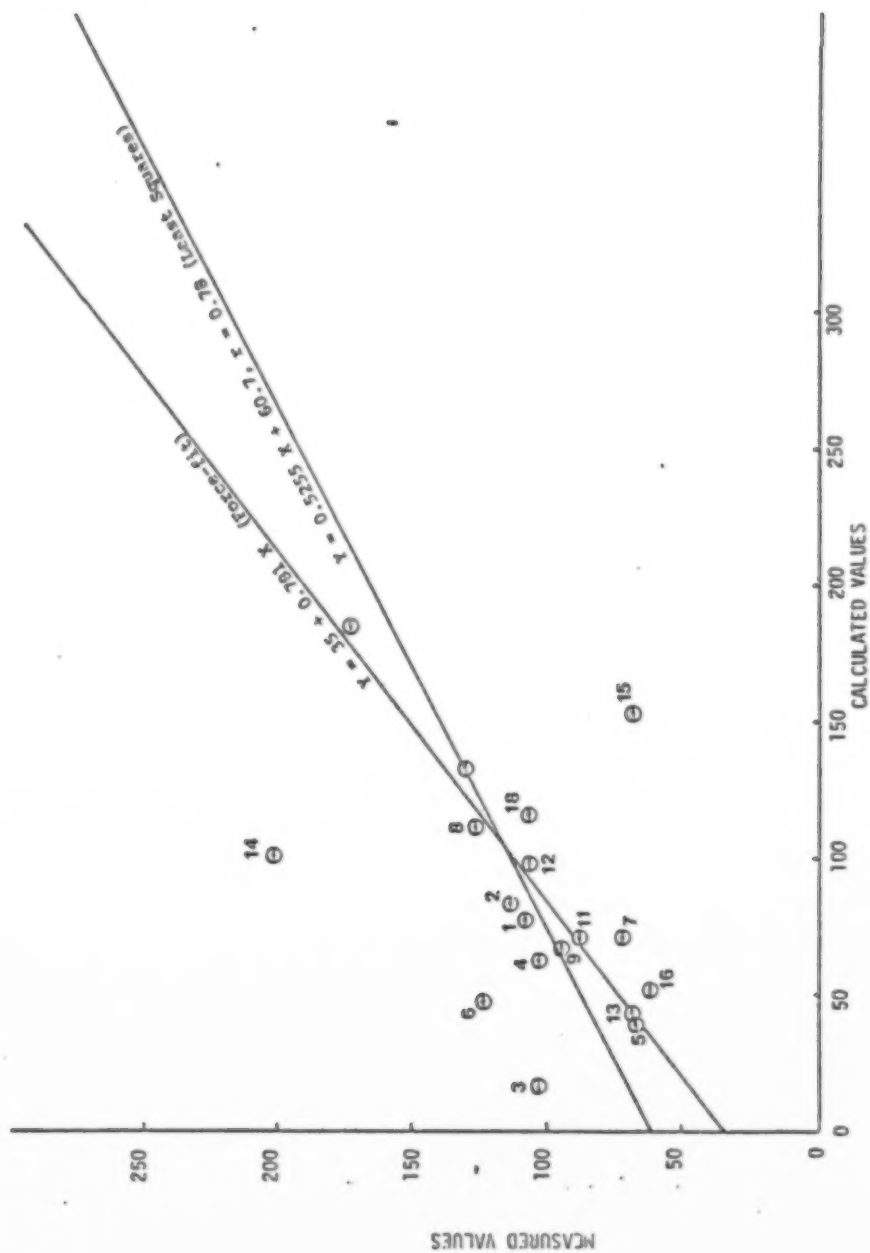
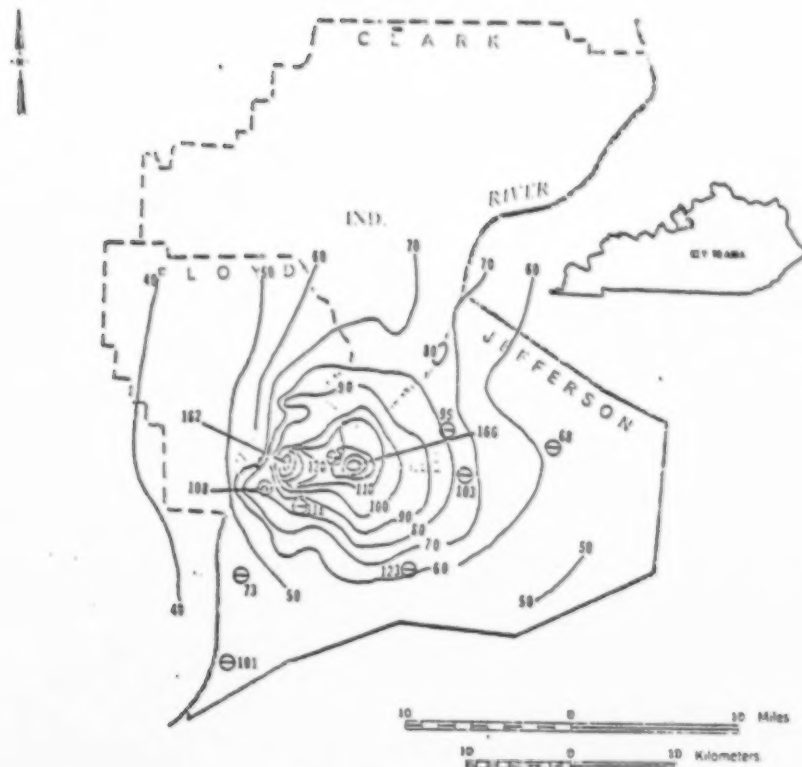


FIGURE 4.4 PARTICULATE MATTER CORRELATION CURVES FROM MODELING CALIBRATION RUN

LOUISVILLE INTERSTATE
Air Quality Control Region



⊖ Location of Sampling Sites and measured value
in $\mu\text{g}/\text{m}^3$ annual arithmetic mean

FIGURE 4.5
ANNUAL ARITHMETIC MEAN CONCENTRATION OF PARTICULATE MATTER
($\mu\text{g}/\text{m}^3$) AS ESTIMATED BY THE DIFFUSION MODEL (EXISTING CONDITIONS 1970)

LOUISVILLE INTERSTATE Air Quality Control Region

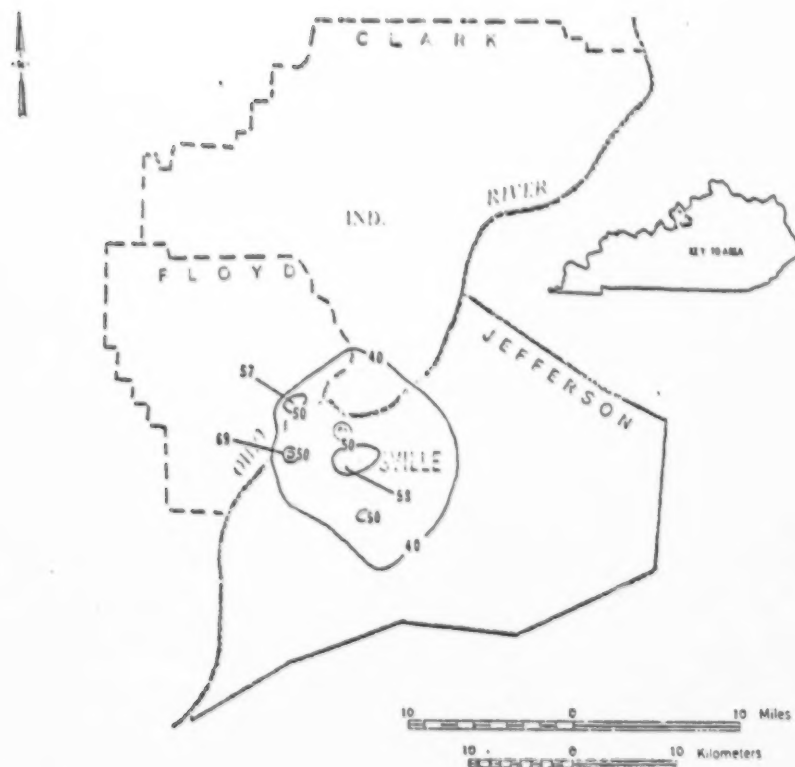


FIGURE 4.6
PREDICTED GROUND LEVEL PARTICULATE MATTER CONCENTRATION
($\mu\text{g}/\text{m}^3$ ANNUAL ARITHMETIC MEAN) FOLLOWING
APPLICATION OF CONTROL STRATEGY (KENTUCKY'S & INDIANA'S REGULATIONS)

V. CONTROL STRATEGY

(50.3) (50.4)
(50.5)

CARBON MONOXIDE, HYDROCARBONS PHOTOCHEMICAL OXIDANTS, AND NITROGEN DIOXIDE

(2.0) 5.1 CONTROL STRATEGY

The ratio of mobile source emissions to stationary source emissions plays a prime role in control strategy development for carbon monoxide, hydrocarbons, photochemical oxidants, and nitrogen dioxide. Therefore, it was necessary to use two example regions for this set of pollutants and perform strategy calculations because they are priority I regions. The Louisville Interstate and Metropolitan Cincinnati Interstate Regions are priority I for hydrocarbons and photochemical oxidants and are priority III for carbon monoxide and nitrogen dioxide. Even though these regions are classified priority III for carbon monoxide, strategy development was performed since the national and state air quality standards were exceeded.

To be able to make an accurate assessment of needed control, it is of course necessary to have reliable emission inventory data as well as reliable air quality data. Using these parameters in conjunction with the air quality standards, it becomes possible to define the exact nature of the problem. The emission inventory data for the Kentucky portions of both the Louisville and Metropolitan Cincinnati Interstate Regions were compiled by the Kentucky Air Pollution Control Commission staff using 1970 data. Data for other portions of the regions were obtained through a three month study¹, commonly referred to as the "summer study", coordinated by the Environmental Protection Agency which covered the months of July, August, and September 1971. A detailed discussion of both emission inventory data and air quality data are contained in Sections 5.2 and 5.3 respectively.

It was decided, for simplicity, to base the control strategy on a proportional model. A proportional model, unlike a diffusion model, assumes a one for one relationship between emissions and air quality without regard to area or meteorological conditions. Therefore a given decrease in emissions would bring about a corresponding improvement in air quality. This is a necessary simplification for this set of pollutants in that they do not lend themselves as easily to diffusional modeling as do particulates and sulfur oxides; nor is the science of diffusional modeling far advanced for carbon monoxide, hydrocarbons, photochemical oxidants and nitrogen dioxide.

Many factors must be taken into consideration if a proportional model is to reliably reflect existing and projected conditions. One of the prime factors is the ratio of mobile source emissions to stationary source emissions. This is true because of the control program the federal government has been, and is still, pursuing in regard to automotive

emissions. The Federal Motor Vehicle Control Program (FMVCP)² calls for progressively more stringent emission controls during future model years. Because the emission limitations differ according to model year of the automobile, a situation results where emissions vary as a function of time. To simplify calculations of projected emissions from automobiles, the Environmental Protection Agency has developed relationships in graphical form that predict emission rates from automobiles for future years. These relationships are based on certain assumptions including:

- (1) emission control devices just meet existing and proposed standards when new, but deteriorate with use;
- (2) that new cars are driven more than older cars;
- (3) that the average route speed is 18 miles per hour;
- (4) that the age distribution of automobiles follows the national pattern; and
- (5) that vehicle miles driven will increase in future years.

In constructing these graphs the year 1967 was assigned a value of one and emissions for future years are given in relation to the 1976 value. The data presented in Table 5.1 were computed from this set of curves with a value of one assigned to the year 1970 and values for other years computed in relation to 1970. This was done since 1970 was measured as the base year for the emission inventory. The values shown in Table 5.1 can be viewed as control factors in that all one must do to obtain automotive emissions for future years is multiply 1970 emissions by the factor for the appropriate year. As used in this chapter, the term "control factor" refers to the fraction remaining after application of emission controls. Therefore a control technique which reduces emissions by 80% would be assigned a control factor of 0.2. No control whatsoever would be assigned a control factor of 1.0.

With stationary sources, it is necessary to consider the source category, estimated growth, and available control techniques. The source categories and their relative contribution of a given pollutant are accurately defined by the emission inventory. All growth factors used in calculating projected emissions were taken from the indices given the June 10, 1970 Economic Projection For Air Quality Control Regions.³ Growth was computed on a simple rather than compound basis, ie, the percent increase is simply the growth factor times the number of years from the base year of 1970. In general, control techniques and regulations are patterned closely after federal regulations related to Section 110 of the Clean Air Act (as amended), entitled Requirements for Preparation, Adoption, and Submittal of Implementation Plans,⁴ Appendix B, and published in the Federal Register, August 14, 1970 (42CFR420). All control strategy calculations, for the Kentucky portions of the interstate regions, were made with the values shown in Tables 5.2 and 5.3. Calculations for the other state were based on data obtained from those states.

TABLE 5.1 AUTOMOTIVE EMISSIONS
WITH THE YEAR 1970 ASSIGNED A VALUE OF ONE

YEAR	CARBON MONOXIDE	NITROGEN OXIDES	HYDROCARBONS
1970	1.0	1.0	1.0
1971	0.96	1.02	0.93
1972	0.93	1.03	0.85
1973	0.87	1.00	0.79
1974	0.83	0.96	0.70
1975	0.74	0.92	0.63
1976	0.64	0.83	0.53
1977	0.54	0.73	0.44
1978	0.46	0.63	0.36
1979	0.39	0.56	0.30
1980	0.32	0.48	0.26

TABLE 5.2. VALUES USED FOR CONTROL STRATEGY CALCULATIONS IN METROPOLITAN CINCINNATI INTERSTATE AIR QUALITY CONTROL REGION

SOURCE CATEGORY	YEARLY GROWTH FACTOR	CONTROL FACTORS*		
		HYDROCARBONS	NITROGEN OXIDES	CARBON MONOXIDES
FUEL COMBUSTION:				
Residential	0.011	1.0	1.0	1.0
Commercial & Institutional	0.048	0.9	0.95	1.0
Industrial	0.038	0.9	0.95	1.0
Storm Electric Power Plant	0.036	0.95	0.95	1.0
PROCESS LOSSES:				
Area	0.038	0.2	1.0	1.0
Chemical	0.045	0.9	1.0	1.0
Food & Agricultural	0.018	1.0	1.0	1.0
Metallurgical	0.017	0.2	1.0	1.0
Mineral	0.033	0.2	1.0	0.1
Petroleum Refining	0.038	1.0	1.0	1.0
Wood Processing	0.035	0.2	1.0	1.0
Petroleum Storage	0.047	0.25	1.0	1.0
Miscellaneous	0.038	0.15	1.0	1.0
SOLID WASTE:				
Incineration	0.011	0.8	1.125	0.375
Open Burning	0.011	0.05	0.25	0.06
TRANSPORTATION:				
Diesel Powered Motor Vehicles	0.038	0.85	1.0	1.0
Off Highway Fuel Usage	0.037	1.0	1.0	1.0
Aircraft	0.062	1.0	1.0	1.0
Railroads	0.028	1.0	1.0	1.0
Vessels	0.069	1.0	1.0	1.0
Gasoline Handling Evaporative Losses	0.047	0.7	1.0	1.0
Motor Boats	0.011	1.0	1.0	1.0
MISCELLANEOUS	0.005	1.0	1.0	1.0

* Fraction remaining after applying controls

TABLE 5.3.

CELLULOSE	Fraction remaining after applying controls
100	100
90	90
80	80
70	70
60	60
50	50
40	40
30	30
20	20
10	10
0	0

The values for both ambient air concentrations and emission values presented in this section are predicated on stationary sources complying with the applicable regulations in Chapter 7 by the given date. Therefore the values presented for years prior to 1975 are only informational since full compliance with all regulations is not anticipated until 1975.

It should also be noted that the emissions projected from automobiles as a result of the Federal Motor Vehicle Control Program are possible only if planned controls of automotive exhausts do indeed produce such reductions. To be able to verify the efficacy of this program and to insure that automobiles are maintained properly for emission control, Kentucky is seeking authority through legislation, to inspect and test exhaust emissions from automobiles on a periodic basis. A study will be performed during the next biennium to define the exact nature of the automotive pollution problem in the state. Additionally data will be gathered which will form the foundation of any regulations that may be necessary to cope with the problem.

5.1.1 METROPOLITAN CINCINNATI INTERSTATE AIR QUALITY CONTROL REGION (MCIAQCR)

5.1.1.1 Carbon Monoxide

For purposes of carbon monoxide strategy development, the second highest value for either the one-hour or eight-hour concentration (whichever concentration presents the worst condition) is chosen as the value defining the magnitude of the problem. The theory behind this is that since the applicable national and state air quality standard is not to be exceeded more than once per year, the value chosen as a base for control strategy development should not be exceeded more than once per year. Selecting the second highest value fulfills this condition whereas selecting the extreme value would set up a condition inconsistent with the language of the air quality standard, which would require control strategy to prevent an air quality concentration already permissible in the standard.

The maximum measured one-hour concentration of 15 parts per million did not exceed the one-hour national or state air quality standard. Therefore, the second highest eight-hour concentration of 9.9 parts per million was chosen as the base for control strategy development. This indicates that a 9.1 percent decrease in carbon monoxide emissions is necessary to achieve the national air quality standard of 9 parts per million, eight-hour concentration.

Applying the Federal Motor Vehicle Control Program and modifying emissions from stationary sources to reflect anticipated growth, a 21.4 percent decrease in carbon monoxide emissions is projected for 1975. This is sufficient to meet the national and state air quality standard by 1975. A graphic display of projected eight-hour concentrations of carbon monoxide due to the FMVCP is shown by the solid line in Figure 5.1.

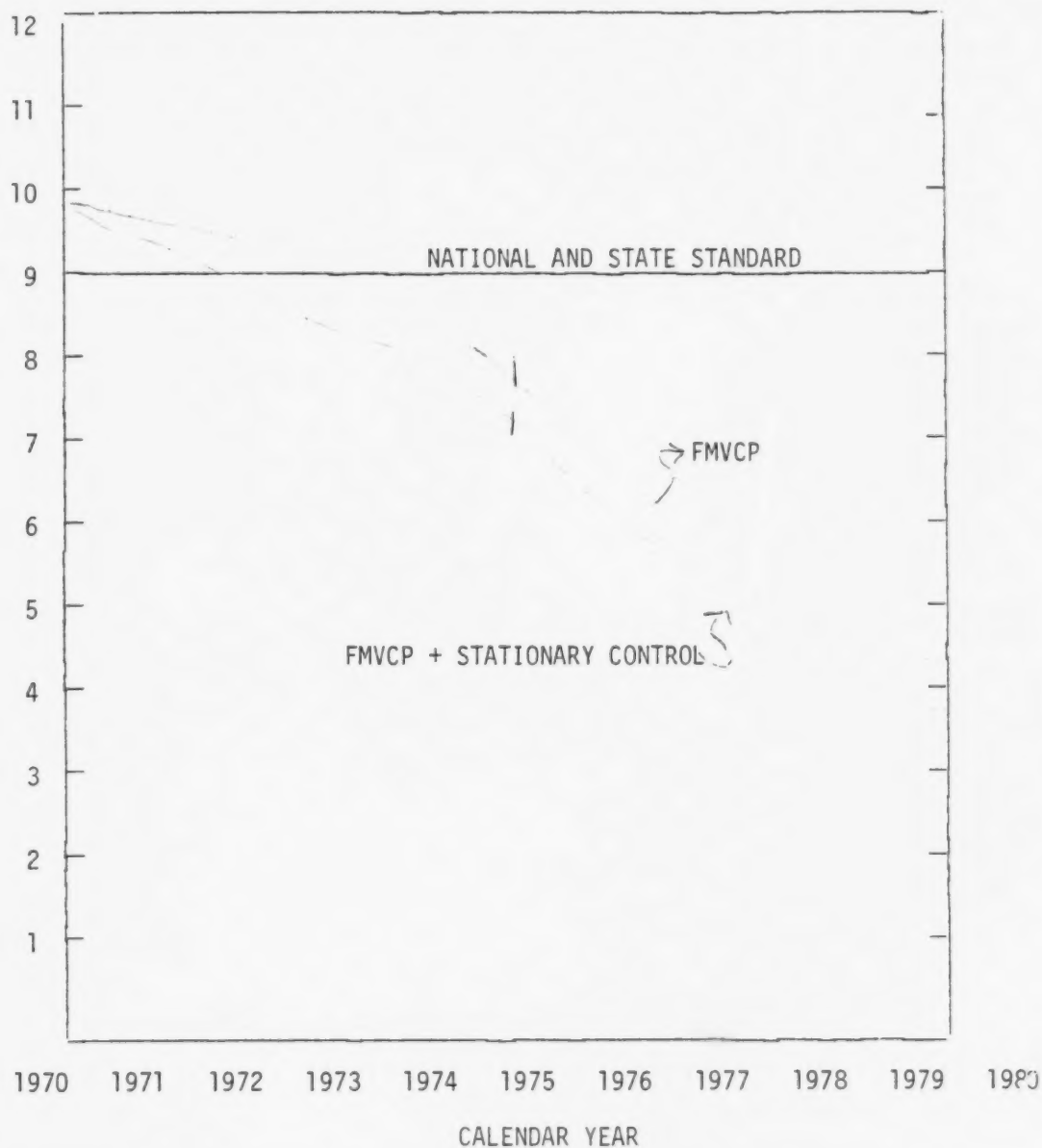


FIGURE 5.1 PROJECTED CARBON MONOXIDE CONCENTRATION IN THE METROPOLITAN CINCINNATI INTERSTATE AIR QUALITY CONTROL REGION AFTER APPLYING CONTROL TO STATIONARY SOURCES AND/OR THE FEDERAL MOTOR VEHICLE CONTROL PROGRAM (FMVCP)

The regulations adopted for control of carbon monoxide from stationary sources provide additional protection and enhancement of the air quality. These regulations provide for carbon monoxide control from grey iron cupolas, blast furnaces, and basic oxygen furnaces. Combining the direct effects of these regulations with the reductions produced through the control of open burning and improved incineration brings about a total reduction in carbon monoxide emissions of 27.2 percent by 1975. The projected eight-hour concentrations due to the combined effects of stationary source control and the FMVCP is shown by the dashed line in Figure 5.1.

The national and state air quality standards for carbon monoxide will be met by 1975. A summary of values relative to the carbon monoxide control strategy is shown in Tables 5.4 and 5.5. For a more detailed analysis relative to 1975 emissions see Table A3c in Appendix A.

5.1.1.2 Nitrogen Dioxide

Since the "summer study" did not encompass a full year of measurements, it was necessary to estimate the annual average for nitrogen dioxide. This estimate was made using the following empirical relationship:

$$\text{Estimated Annual Average, ug/m}^3 = 25.2 + 0.76 (\text{July-August-September Average, ug/m}^3).$$

Utilizing this relationship, a value of 83 micrograms per cubic meter (0.043 parts per million) was obtained as the annual average and was consequently selected as the base value for control strategy development.

The national and state air quality standard for nitrogen dioxide is 0.05 parts per million, annual average. Consequently, this standard was met for the base year (1970) and through 1980.

Since the FMVCP will not effect a decrease in nitrogen dioxide emissions from motor vehicles until the 1975 model year, increases of 10.7 percent and 8.0 percent are projected for 1975 and 1977 respectively. (Figure 5.2 shows the projected annual average concentration as a result of the FMVCP).

The application of nitrogen oxides emission limitation to new indirect heat exchangers of 250 MM BTU/Hr or more will assure the maintenance of the standard.

A summary of values relative to the nitrogen dioxide control strategy is shown in Tables 5.4 and 5.5. For a more detailed analysis relative to projected 1975 emissions see Table A3d in Appendix A.

5.1.1.3 Hydrocarbons and Photochemical Oxidants

Photochemical oxidants are not emitted directly but are formed by complex

TABLE 5.4 SUMMARY OF CONTROL STRATEGY ANALYSIS FOR CARBON MONOXIDE,
HYDROCARBONS, PHOTOCHEMICAL OXIDANTS AND NITROGEN DIOXIDE
METROPOLITAN CINCINNATI INTERSTATE AIR QUALITY CONTROL REGION

NATIONAL AIR QUALITY STANDARD, PPM	CONCENTRATION IN PPM FOR STRATEGY DEVELOPMENT	EXISTING EMISSIONS TONS/YEAR	EMISSIONS REQUIRED ACHIEVE STANDARDS TONS/YEAR	EMISSIONS AFTER APPLICATION OF FEDERAL MOTOR VEHICLE PROGRAM			EMISSIONS AFTER APPLICATION OF STATIONARY CONTROLS AND FMCpe		
				1975	1977	1975	1975	1977	1977
CO	9.0 ^a	995,680	905,073	782,495	613,072	725,050	553,190		
Oxidants	0.08 ^b	214,474 ^d	145,842 ^d	170,657	146,902	134,371	108,666		
NO _x	0.05 ^c	214,308	120,441	237,257	231,408	227,932	220,827		

a - 8 hour concentration

b - 1 hour concentration

c - Annual Average

d - Hydrocarbons

e - FMCpe = Federal Motor Vehicle Control Program

TABLE 5.5 PROJECTED AIR QUALITY CONCENTRATION AND EMISSION VALUES FOR THE METROPOLITAN CINCINNATI INTERSTATE AIR QUALITY CONTROL REGION WITH APPLICATION OF FEDERAL MOTOR VEHICLE CONTROL PROGRAM AND STATIONARY SOURCE CONTROL

YEAR	CARBON MONOXIDE		NITROGEN OXIDES		PHOTOCHEMICAL OXIDANTS/HYDROCARBONS	
	PROJECTED EMISSIONS TONS/YEAR	PROJECTED 8-HOUR CONCENTRATION, PPM	PROJECTED EMISSIONS TONS/YEAR	PROJECTED ANNUAL AVERAGE CONCENTRATION, PPM	PROJECTED EMISSIONS ^a TONS/YEAR	PROJECTED 1 HOUR ^b CONCENTRATION, PPM
1970	995,680	9.9	214,308	0.042	214,474	0.12
1972	886,421	8.8	221,943	0.044	163,228	0.091
1973	835,553	8.3	224,574	0.044	153,626	0.087
1974	802,215	8.0	226,253	0.044	143,515	0.080
1975	725,050	7.2	227,932	0.044	134,371	0.075
1976	639,120	6.4	224,855	0.042	120,777	0.068
1977	553,190	5.5	220,827	0.040	108,666	0.061
1978	484,790	4.8	216,799	0.039	98,038	0.055
1979	423,157	4.2	215,625	0.038	90,377	0.51
1980	365,523	3.6	213,499	0.037	85,681	0.048

a. Measured as hydrocarbon emissions

b. Measured as ambient concentration of photochemical oxidants

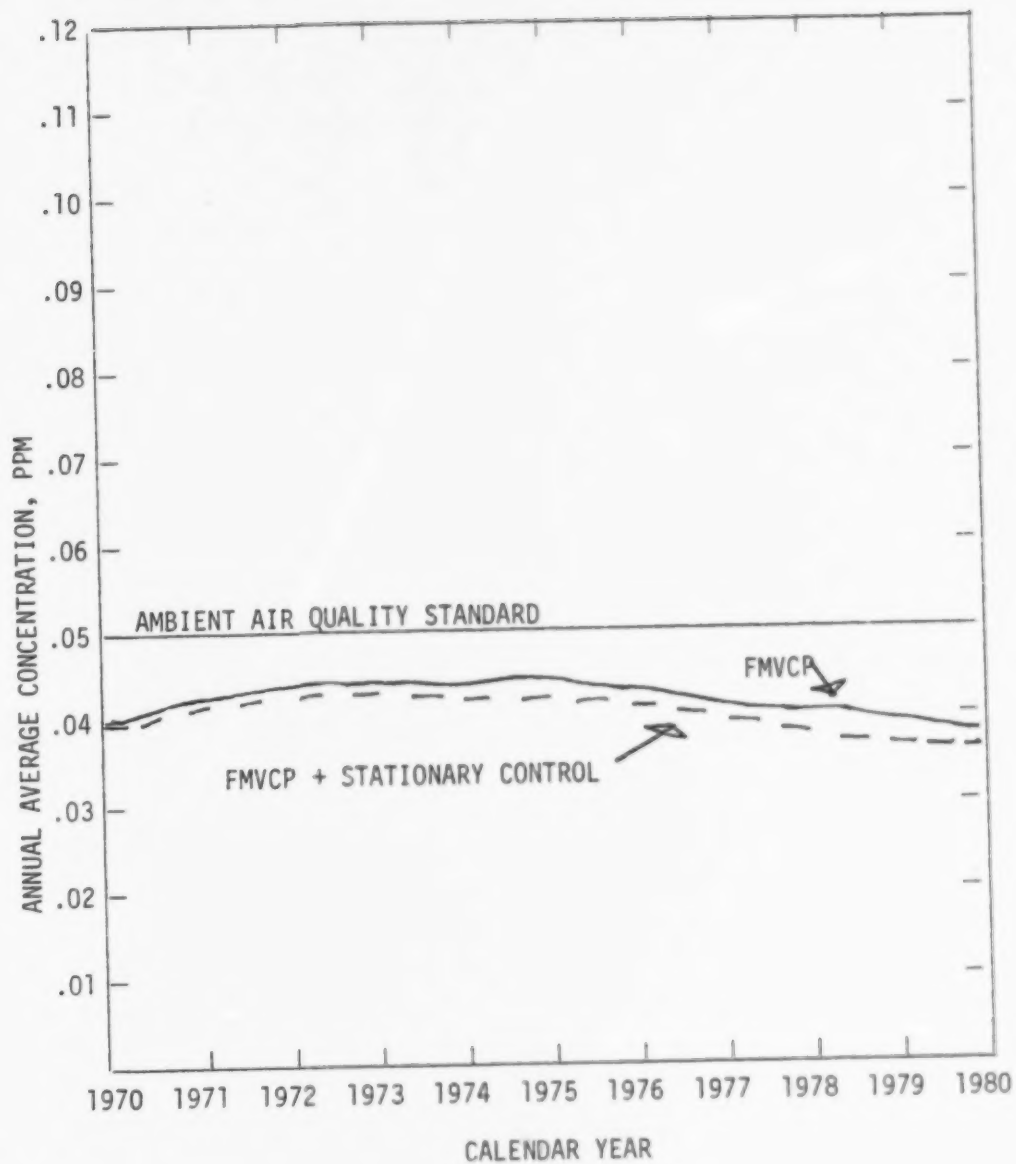


FIGURE 5.2 PROJECTED NITROGEN OXIDES CONCENTRATION IN THE METROPOLITAN CINCINNATI INTERSTATE AIR QUALITY CONTROL REGION AFTER APPLYING CONTROL TO STATIONARY SOURCES AND/OR THE FEDERAL MOTOR VEHICLE CONTROL PROGRAM (FMVCP)

interactions when various pollutants, primarily hydrocarbons and nitrogen oxides, are exposed to sunlight. It has been established that photochemical oxidant levels vary as a function of the hydrocarbon level. Therefore, the ambient air quality value for photochemical oxidants is selected as a base for control strategy development with hydrocarbons being the pollutant controlled.

The second highest one-hour concentration is chosen as the value for air quality projections and control strategy development. The reasoning is that since the applicable national and state air quality standard is not to be exceeded more than once per year, the value chosen as a base for control strategy development should not be exceeded more than once per year. Therefore selecting the second highest value, presents a situation consistent with the language of the air quality standard in which the standard may be exceeded once per year.

Proceeding on this premise a base value of 0.12 parts per million, one hour concentration, was selected from the summer study for control strategy development.

The relationship between photochemical, oxidant concentrations and the required reduction in hydrocarbon emissions to achieve the national air quality standard is described in Figure 1, Appendix J of the Requirements for Preparation, Adoption, and Submittal of Implementation Plans⁴. Entering this curve with the value of 0.12 parts per million, a reduction of 32 percent in hydrocarbon emissions is indicated.

Applying the FMVCP emission controls to automotive sources and modifying stationary sources by anticipated growth, reductions in hydrocarbon emissions of 20.4 percent and 31.5 percent are projected for 1975 and 1977 respectively. The projected one-hour concentrations as a result of the FMVCP is shown by the solid line in Figure 5.3. As one can be seen from this curve, the air quality standard will not be met until 1978 as a result of automotive control alone.

To calculate the further reduction achieved through application of controls to stationary sources, the hydrocarbon regulations contained in Chapter 7 were applied to the appropriate sources. In addition to these specific regulations, the reductions due to open burning control and improved incineration practices were considered. Also it was assumed that commercial and industrial fuel burning sources could achieve a 10 percent reduction in hydrocarbon emissions and power plants were assumed to bring about a 5 percent reduction. These reductions reflect the combined effects of improved equipment design, improved operating practices in conjunction with some fuel substitution. The application of these stationary source controls in combination with the FMVCP emission controls will achieve the national and state air quality standard by 1975. A plot of the projected one-hour concentration as a result of these regulations and the FMVCP emission controls is shown by the dashed line in Figure 5.3. As can be seen from this curve, the maximum one-hour concentration level in 1975 is projected to be 0.075 parts per million. Also there is

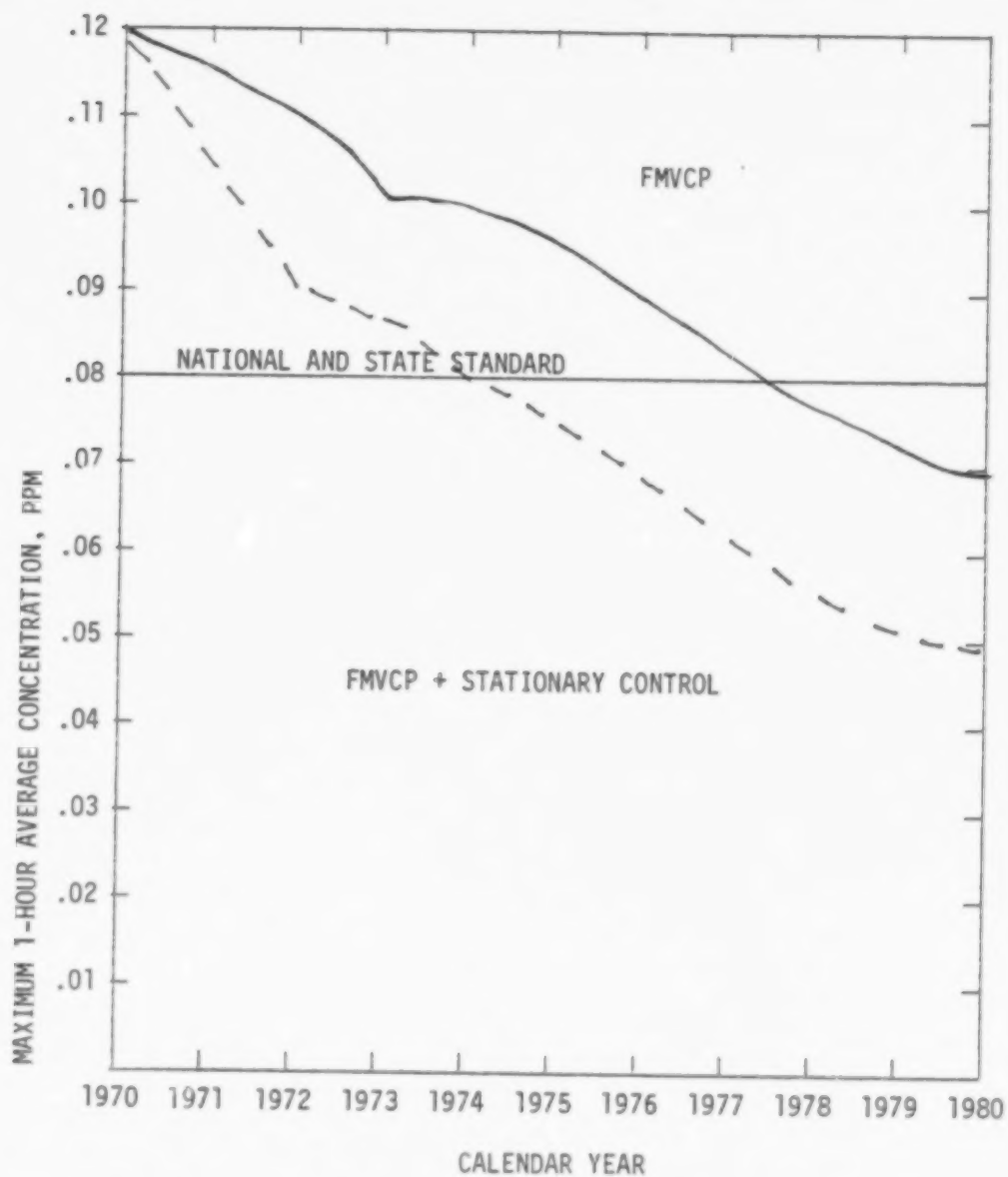


FIGURE 5.3 PROJECTED PHOTOCHEMICAL OXIDANTS CONCENTRATION IN THE METROPOLITAN CINCINNATI INTERSTATE AIR QUALITY CONTROL REGION AFTER APPLYING CONTROL TO STATIONARY SOURCES AND/OR THE FEDERAL MOTOR VEHICLE CONTROL PROGRAM (FMVCP)

continued enhancement of the air quality through the year 1980.

A summary of the control strategy is shown in Tables 5.4 and 5.5. A more detailed breakdown of projected emissions from various sources is shown in Table A3e of Appendix A.

5.1.2 LOUISVILLE INTERSTATE AIR QUALITY CONTROL REGION (LIAQCR)

5.1.2.1 Carbon Monoxide

The maximum measured one-hour concentration of 17 parts per million did not exceed the one-hour national or state air quality standard. Therefore, the control strategy is based on the second highest eight-hour concentration using the same rationale outlined in Section 5.1.1.1. This value of 10.5 parts per million exceeds the related national and state air quality standard of 9 parts per million. A reduction of 13.3 percent is needed to achieve the national and state standard.

A reduction of 18.5 percent can be achieved by 1975 through application of the FMVCP emission control. This is adequate to meet the national air quality standard and will provide air quality enhancement through the year 1980. A graphic display of this projected air quality is shown by the solid line in Figure 5.4.

The regulations adopted for control of carbon monoxide from stationary sources provide additional enhancement and protection of the air quality. Considering these regulations, which provide for carbon monoxide control from grey iron cupolas and waste gas streams from petroleum processes, in conjunction with the FMVCP, an eight-hour concentration of 7.3 parts per million is projected for 1975. The dashed line in Figure 5.4 is a plot of air quality versus time through the year 1980.

A summary of the control analysis is shown in Tables 5.6 and 5.7. For a more detailed view of projected emissions from various sources categories see Table A6c of Appendix A.

5.1.2.2 Nitrogen Dioxide

Utilizing the method outlined in Section 5.1.1.2, the estimated annual average for nitrogen dioxide is 0.040 parts per million. Therefore, the national and state air quality standard of 0.05 parts per million, annual average is met for the base year.

Application of the FMCVP emission controls will bring about increases of 13.0 percent and 13.1 percent by 1975 and 1977 respectively. As can be seen from the solid line in Figure 5.5, the national or state air quality standard will continue to be met through the year 1980.

The application of Nitrogen oxides emission limitation to new indirect heat exchangers of 250 MM BTU/Hr or more will assure the maintenance of the standard.

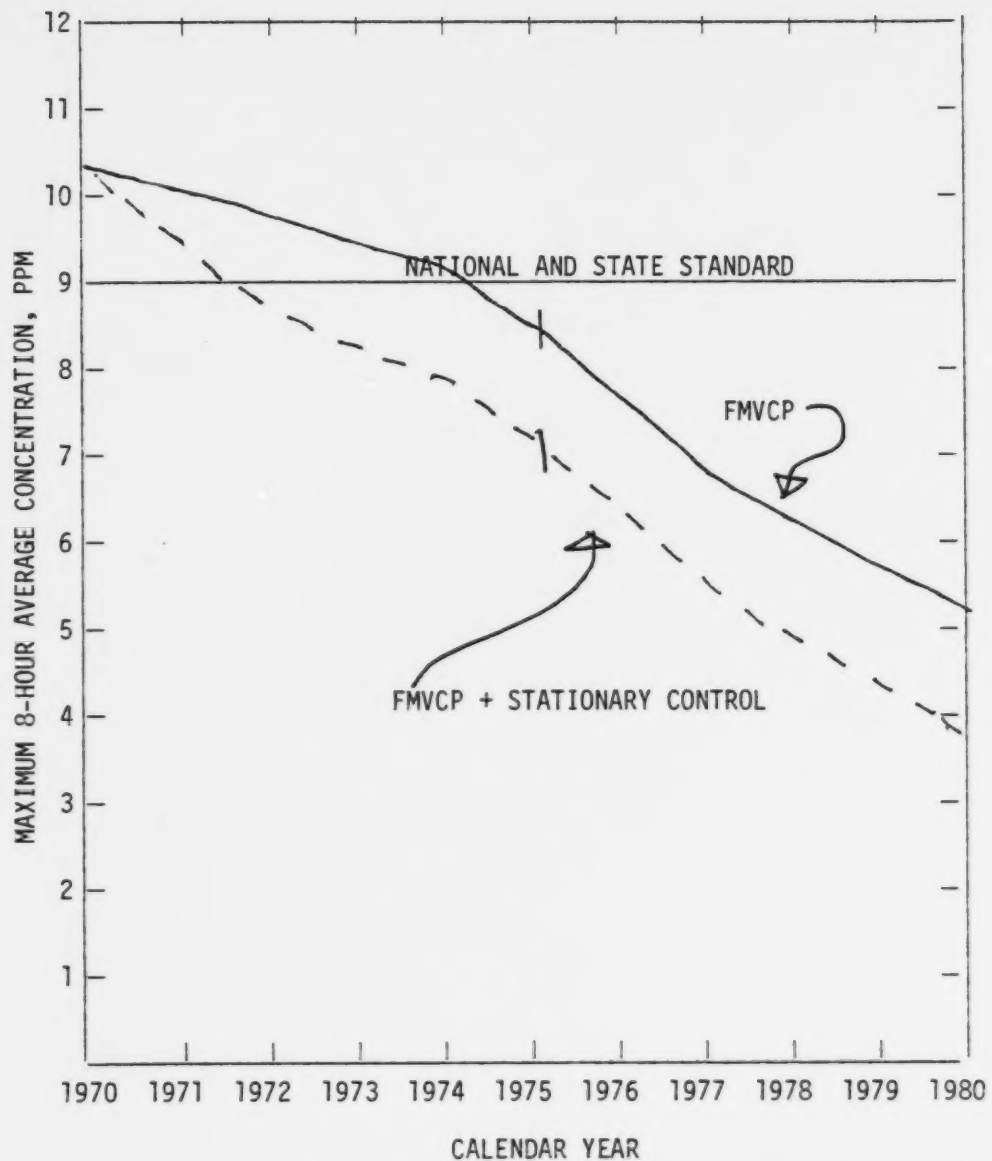


FIGURE 5.4 PROJECTED CARBON MONOXIDE CONCENTRATION IN THE LOUISVILLE INTERSTATE AIR QUALITY CONTROL REGION AFTER APPLYING CONTROL TO STATIONARY SOURCES AND/OR THE FEDERAL MOTOR VEHICLE CONTROL PROGRAM (FMVCP)

TABLE 5.6 SUMMARY OF CONTROL STRATEGY ANALYSIS FOR CARBON MONOXIDE,
HYDROCARBONS, PHOTOCHEMICAL OXIDANTS, AND NITROGEN DIOXIDE
LOUISVILLE INTERSTATE AIR QUALITY CONTROL REGION

NATIONAL AIR QUALITY STANDARD, PPM	CONCENTRATION IN PPM FOR STRATEGY DEVELOPMENT	EXISTING EMISSIONS TONS/YEAR	EMISSIONS REQUIRED ACHIEVE STANDARDS TONS/YEAR	EMISSIONS AFTER APPLICATION OF FEDERAL MOTOR VEHICLE PROGRAM		EMISSIONS AFTER APPLICATION OF STATIONARY CONTROLS AND FMVCP ^e	
				1975	1977	1975	1977
CO	9.0 ^a	344,560	298,734	280,813	227,878	239,647	184,512
Oxidants	0.08 ^b	87,253 ^d	48,862	78,071	72,348	47,398	39,369
NO _x	0.05 ^c	99,629	57,884	112,596	112,676	107,034	106,695

a - 8 hour concentration

b - 1 hour concentration

c - Annual Average

d - Hydrocarbons

e - FMVCP - Federal Motor Vehicle Control Program

TABLE 5.7 PROJECTED AIR QUALITY CONCENTRATIONS AND EMISSION VALUES FOR THE LOUISVILLE INTERSTATE AIR QUALITY CONTROL REGION WITH APPLICATION OF FEDERAL MOTOR VEHICLE CONTROL PROGRAM AND STATIONARY SOURCE CONTROL

YEAR	CARBON MONOXIDE		NITROGEN OXIDES		PHOTOCHEMICAL OXIDANTS/HYDROCARBONS	
	PROJECTED EMISSIONS TONS/YEAR	PROJECTED 8-HOUR CONCENTRATION, PPM	PROJECTED EMISSIONS TONS/YEAR	PROJECTED ANNUAL AVERAGE CONCENTRATION, PPM	PROJECTED EMISSIONS ^a TONS/YEAR	PROJECTED 1-HOUR ^b CONCENTRATION, PPM
1970	344,619	10.5	99,629	0.040	87,253	0.140
1972	290,939	8.9	101,887	0.043	56,268	0.090
1973	274,793	8.4	103,818	0.044	53,962	0.087
1974	264,359	8.1	105,426	0.044	50,192	0.081
1975	239,647	7.3	107,034	0.044	47,398	0.076
1976	212,080	6.5	107,026	0.045	43,139	0.069
1977	184,512	5.6	106,695	0.045	39,369	0.063
1978	162,656	5.0	106,364	0.045	36,087	0.058
1979	143,655	4.4	107,002	0.045	33,781	0.054
1980	124,654	3.8	107,317	0.045	32,452	0.052

a. Measured as hydrocarbon emissions

b. Measured as ambient concentration of photochemical oxidants

5.1.2.3 Hydrocarbons and Photochemical Oxidants

Using the rationale outlined in Section 5.1.1.3, a base value for photochemical oxidants of 0.14 parts per million, one-hour concentration, was selected from the summer study for control strategy development. This indicates that a reduction of 44 percent in hydrocarbon emissions is necessary to achieve the national and state air quality standard of 0.08 parts per million for photochemical oxidants.

Applying the FMVCP emission controls to automotive sources and modifying stationary sources by anticipated growth, reductions in hydrocarbon emissions of 10.5 percent and 1/.1 percent are projected for 1975 and 1977 respectively. This clearly will not be sufficient to meet the air quality standard and it will be necessary to apply stationary source control. The solid line in Figure 5.6 is a plot of the projected one-hour concentrations of photochemical oxidants due to application of the FMVCP emission controls through the year 1980. As can be seen from this plot, the air quality standard would not be met through the year 1980 with application of FMVCP alone.

To calculate the further reduction achieved through application of controls to stationary sources, the hydrocarbon regulations contained in Chapter 7 were applied to the appropriate sources. In addition to these specific regulations, the reductions due to open burning control and improved incineration practices were considered. Also it was assumed that commercial and industrial fuel burning sources could achieve a 10 percent reduction in hydrocarbon emissions and power plants were assumed to bring about a 5 percent reduction. These reductions reflect the combined effects of improved equipment design and improved operating practices in conjunction with some fuel substitution. The application of these stationary source controls in combination with the FMVCP will achieve the national and state air quality standard for photochemical oxidants by 1975. A plot of the projected air quality as a result of these regulations and the FMVCP is shown by the dashed line in Figure 5.6. As can be seen from this curve, the air quality in 1975 is projected to be 0.076 parts per million. Also there is continued enhancement of the air quality through the year 1980.

A summary of the control strategy analysis is shown in Tables 5.6 and 5.7. A more detailed breakdown of projected emissions from various sources is shown in Table A6e Appendix A.

(2.0) 5.2 EXISTING EMISSION INVENTORY

Tables showing 1970 emission inventory data with respect to carbon monoxide, hydrocarbons and nitrogen oxides are in Appendix A to this Plan.

A dash mark (-) in the emission inventory tables represents negligible emissions of less than 0.5 tons per year, as opposed to zero (0) in which case no emissions were calculated.

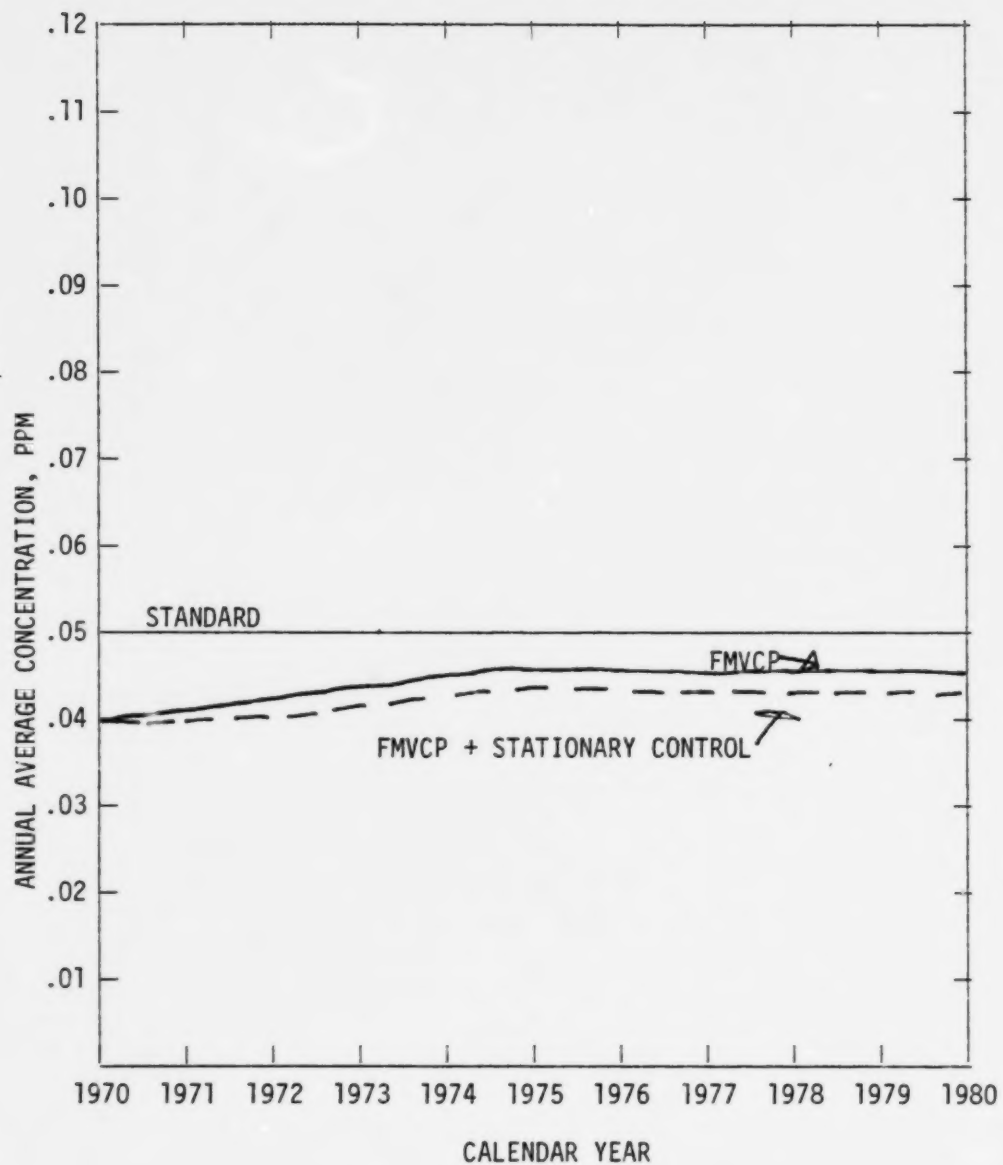


FIGURE 5.5 PROJECTED NITROGEN OXIDES CONCENTRATION IN THE LOUISVILLE INTERSTATE AIR QUALITY CONTROL REGION AFTER APPLYING CONTROL TO STATIONARY SOURCES AND/OR THE FEDERAL MOTOR VEHICLE CONTROL PROGRAM (FMVCP)

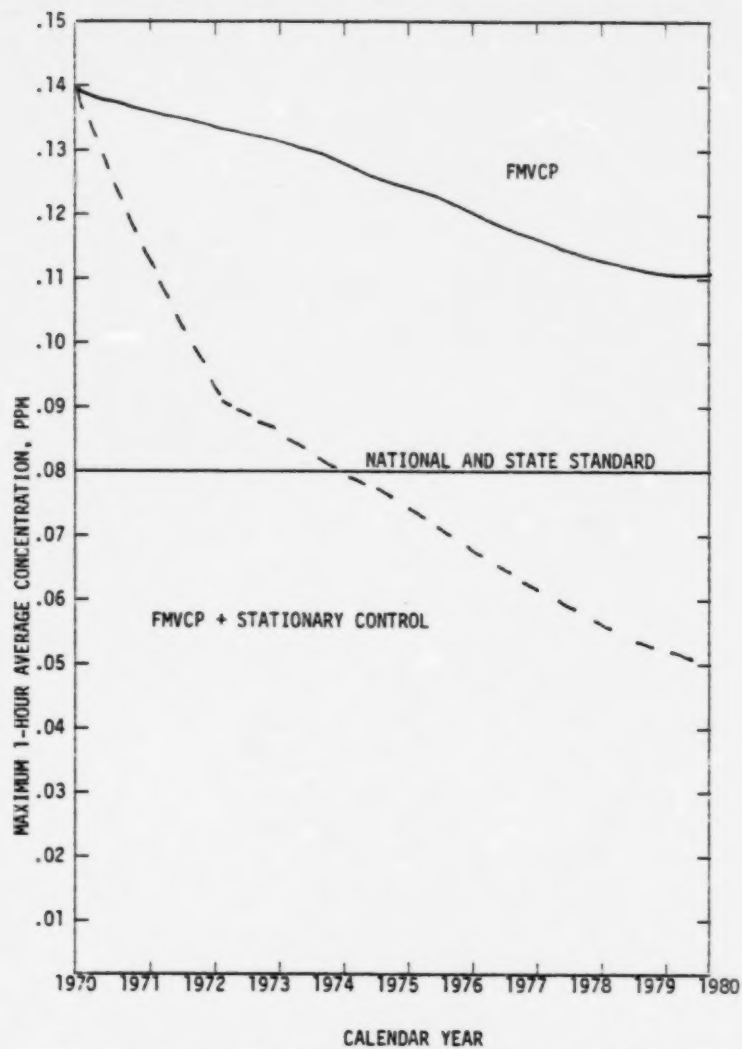


FIGURE 5.6 PROJECTED PHOTOCHEMICAL OXIDANTS CONCENTRATION IN THE LOUISVILLE INTERSTATE AIR QUALITY CONTROL REGION AFTER APPLYING CONTROL TO STATIONARY SOURCES AND/OR THE FEDERAL MOTOR VEHICLE CONTROL PROGRAM (FMVCP)

Figures 5.7 through 5.9 of this section show the percentage contributions of the five source categories to the regional pollution picture by pollutant. Some contributions are zero or negligible and do not show up on the charts, but are pointed out in the figures by notation. The five categories are as follows: Fuel combustion - stationary sources, process losses, solid waste disposal, transportation and miscellaneous area sources.

The discussion to follow will deal primarily with extremes of high or low contributions. Some categories falling in between may be deleted from discussion. The reader is referred to the pie charts for the relative contribution of any category not specifically mentioned in the text.

5.2.1 Appalachian Air Quality Control Region

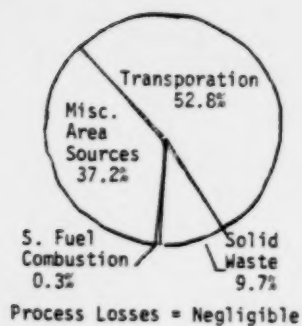
Transportation and miscellaneous area sources (primarily burning coal refuse disposal areas) are the two largest contributors to the total emissions of carbon monoxide (CO), hydrocarbons (HC) and nitrogen oxides (NO_x) in the Appalachian Region (See Figure 5.7).

Carbon monoxide (CO) emissions in the region (296,098 tons for 1970) accounted for 19.2% of the state's total CO emissions. This makes the Appalachian Region the one with the largest total CO emissions in relation to the state's other eight regions. Stationary fuel combustion and process sources are practically insignificant contributors of CO in the region with emissions from process sources being negligible and stationary fuel combustion sources adding only 0.3% of the total regional CO emissions.

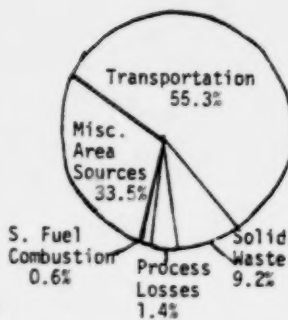
Hydrocarbons (HC) emissions (57,003 tons) in the Appalachian Region during 1970 accounted for 13.7% of the state's total hydrocarbon emissions, second only to the Louisville Region in percentage contribution to state HC total. As regards relative source category contribution to regional total HC emissions, solid waste disposal (mainly point source burning) ranked third, following transportation and miscellaneous area sources. Solid waste disposal accounts for 9.2% of the regional total. Stationary fuel combustion and process losses are minor contributors to the overall regional hydrocarbon total as seen in Figure 5.7.

Nitrogen oxides (NO_x) emissions in the Appalachian Region which amounted to 50,587 tons in 1970 represented 8.8% of the state's total NO_x emissions. This placed it third in ranking relative to regional contributions to state total NO_x. Figure 5.7 shows transportation and miscellaneous area sources as the two larger NO_x emitting categories and stationary fuel combustion as the third ranking category. Area source stationary fuel combustion (SFC) emissions predominated the SFC total. There was no NO_x emissions from process losses reflected in the 1970 emission inventory for the Appalachian Region.

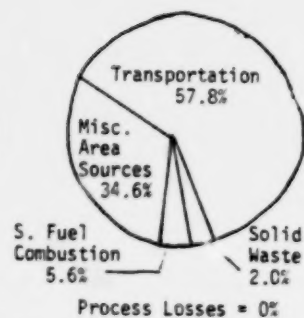
CARBON MONOXIDE



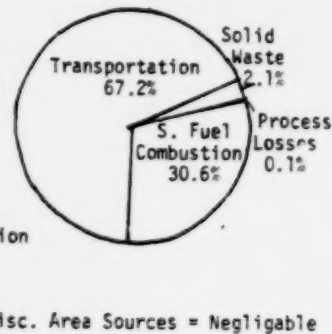
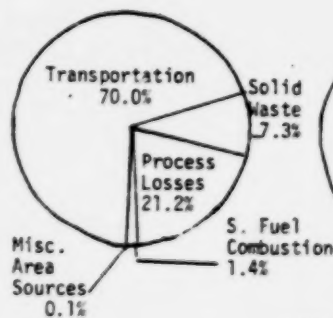
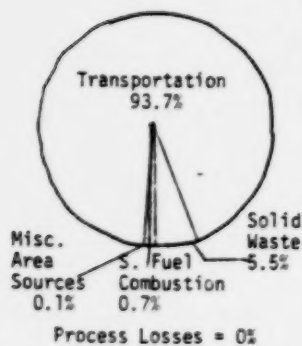
HYDROCARBONS



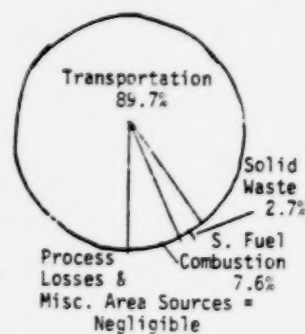
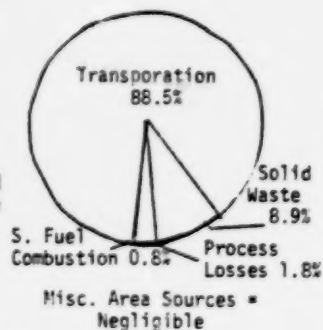
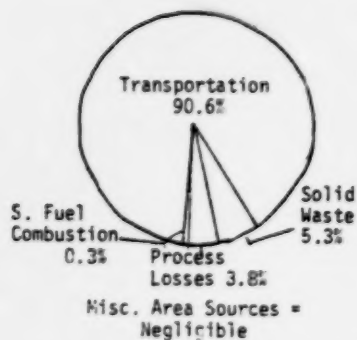
NITROGEN OXIDES



APPALACHIAN AIR QUALITY CONTROL REGION



BLUEGRASS AIR QUALITY CONTROL REGION



METROPOLITAN CINCINNATI INTERSTATE AIR QUALITY CONTROL REGION (Kentucky Portion Only)

Figure 5.7 Relative Contributions of Regional Total Source Category Emissions to Regional Pollutant Totals

5.2.2 Bluegrass Air Quality Control Region

Transportation was the largest contributing category to the emissions of all three pollutants: Carbon Monoxide (93.7%), Hydrocarbons (70.0%), and Nitrogen Oxides (67.2%) in the Bluegrass region during 1970. (See Figure 5.7).

Carbon monoxide (CO) emissions, 200,430 tons for 1970 in the Bluegrass Region, were 13.0% of the state's total CO emissions. This makes this region the third ranking CO emitting region in the state. Solid waste disposal was the second largest contributing category to the Bluegrass region's CO emissions. Process losses of CO were zero for the region in 1970 and miscellaneous area source emissions were very minor, only 0.1% of the regional CO total.

Hydrocarbons (HC) emissions in the Bluegrass region for 1970 (53,837 tons) were 13.0% of Kentucky's total HC emissions. Second to transportation as a category contributing to the regional total HC emissions was process losses with 14,434 tons or 21.2% of the regional total. These losses resulted mainly from the food and agricultural industries. Particularly, fermentation processes (distilleries, whiskey storage) were the largest contributors in this category. Miscellaneous area source emissions were only 0.1% of the regional total HC emissions.

Nitrogen oxides (NO_x) emissions, 46,940 tons for 1970 in the Bluegrass Region, represented 8.1% of the state's total NO_x emissions. The second largest contributing category (following transportation) to the regional total NO_x emissions is stationary fuel combustion (SFC). In this region point source NO_x emissions from stationary fuel combustion sources predominated, making up 77.5% of the region's total NO_x emissions from SFC sources. This is attributable to the power plants and numerous distilleries operating during 1970 in the region. Miscellaneous area source emissions of NO_x for the region were negligible for 1970 and process losses accounted for only 0.1% of the regional NO_x total.

5.2.3 Metropolitan Cincinnati Interstate Air Quality Control Region (Kentucky Portion)

In the Cincinnati region transportation was the largest emitter of all three pollutants: Carbon Monoxide (90.6%), Hydrocarbons (88.5%) and Nitrogen Oxides (89.7%). Percentages are of the regional total of each pollutant (See Figure 5.7).

Carbon Monoxide (CO) emissions for the region in 1970 were 127,346 tons or 8.3% of the state's total CO emissions. Second to transportation in rank toward the 127,000 + tons was solid waste disposal with 6,697 tons or 5.3% of the regional total CO emissions. Process losses were third with its 3.8% coming solely from metallurgical industries. Miscellaneous area source CO emissions were negligible in 1970 and stationary fuel combustion accounted for only 0.3% of the regional total CO.

Hydrocarbons (HC) emissions in the Cincinnati Region amounted to 27,628 tons in 1970 or 6.7% of the Kentucky total HC emissions. Solid waste disposal ranked second to transportation in percent contribution to regional total HC, emitting 8.9% of the total. Miscellaneous area source HC emissions were negligible and stationary fuel combustion sources emitted a relatively minor amount of HC, only 0.8% of the regional total. (See Figure 5.7).

Nitrogen Oxides (NO_x) emissions in the Cincinnati Region were 21,101 tons or only 3.6% of the total state's NO_x emissions. This means that this region accounted for less of Kentucky's total NO_x than any other region in the state. Second to transportation in categorical contribution to regional total NO_x was stationary fuel combustion with 7.6% (See Figure 5.7). The percentage contribution of the emissions of NO_x from process losses and miscellaneous area sources to the regional total NO_x were negligible.

5.2.4

Evansville-Owensboro-Henderson Interstate Air Quality Control Region (Kentucky Portion) (Referred to herein as the Evansville-Henderson Region)

Carbon Monoxide (CO) emissions for the Evansville-Henderson region were 83,311 tons in 1970. This was 5.4% of Kentucky's total CO emissions. Consequently, this region has the least total CO emissions of any region in the state. Transportation tops the list of contributors to the regional total CO emissions with 84.4%. Solid waste disposal ranks second to transportation in relative contribution to the regional CO total. Process losses and miscellaneous area sources rank third and fourth respectively. The process loss contribution was due primarily to a single wood processing plant (papermill) while the miscellaneous area source contribution resulted mainly from burning coal refuse.

Hydrocarbons (HC) emissions in the region for 1970 were 22,113 tons or 5.3% of the state's total HC emissions. As with CO, the region ranks lowest also in hydrocarbon emissions of any other region in the state. Transportation ranks first in the region with 65.6% of the region's HC emissions. Second to transportation in relative contribution to the region's total HC emissions were process losses with 21.5%. This came mainly from the food and agricultural industries, the largest sources being distilleries. Solid waste disposal ranked third in the region as a source of hydrocarbon emissions with 1,745 tons (7.9%). (See Figure 5.8).

Nitrogen Oxides (NO_x) emissions for 1970 in the Evansville-Henderson Region amounted to 40,859 tons or 7.1% of the state's total NO_x emissions. For this region transportation took a second place to stationary fuel combustion as the major source of NO_x . Transportation accounted for only 31.3% of the regional NO_x (12,803 tons) while stationary fuel combustion sources accounted for 59.8% of the total NO_x for the region. This large contribution by stationary fuel combustion (SFC) sources and in particular, as it is, by point source SFC

sources is attributable to the five power plants operating in the region in 1970. These accounted for approximately 90% of the stationary fuel combustion category's 24,424 tons of NO_x emissions during 1970 for the region. Solid waste disposal and miscellaneous area sources contributed a relatively minor 0.9% and 1.0% respectively to the regional total of Nitrogen Oxides emissions. The pie charts of Figure 5.8 best illustrate the relative contributions of the various source categories.

5.2.5 Huntington-Ashland-Portsmouth-Ironton Interstate Air Quality Control Region (Kentucky Portion) (Referred to herein as the Huntington-Ashland Region)

Carbon Monoxide (CO) emissions in the Huntington-Ashland Region amounted to 6.3% of the total Kentucky CO emissions. This is the second lowest ranking region in CO emissions in the state. Transportation, as can be seen from Figure 5.8, is the largest CO emitter in the region with Process Losses being second. Petroleum refining and petrochemical operations made up about 64% of the total process loss CO emissions. Metallurgical operations contributed the bulk of the remaining 36%.

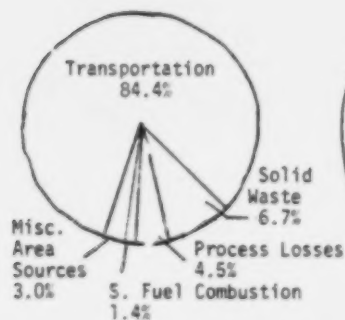
Regional hydrocarbons (HC) emissions made up 8.0% of the state's total HC emissions. The major portion of HC in the region came from transportation (47.3%) with a nearly equal portion (42.6%) coming from process losses, primarily petroleum refining and petrochemical operations. Miscellaneous area sources were minimal contributors of HC with only 0.9% of the regional total.

Nitrogen oxides (NO_x) emissions amounted to 6.7% of the state's total NO_x emissions. Stationary fuel combustion, particularly by point sources, was top contributor with 62.7% of the regional total NO_x emissions. The bulk (or about 80%) of the NO_x emissions from stationary fuel combustion came from power plants in the region. Transportation accounted for 35.9% of the total NO_x in the region to place second in rank. Miscellaneous area source emissions were negligible and process losses amounted to only 0.2% of the regional NO_x total. Figure 5.8 gives the completed NO_x picture.

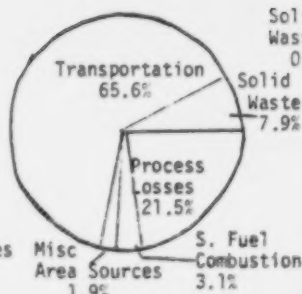
5.2.6 Louisville Interstate Air Quality Control Region (Kentucky Portion)

Carbon Monoxide (CO) emissions for the Louisville region in 1970 amounted to 255,077 tons. This is 16.5% of the state's total CO emissions. Transportation accounted for 82.5% of the regional total or 210,563 tons. This was the maximum contributor. The next highest contributor was the process losses category with 25,200 tons (9.9%). Petroleum Refining and petrochemical operations contributed the bulk (98%) of the process CO. Miscellaneous area source emissions of CO were negligible relative to the regional total.

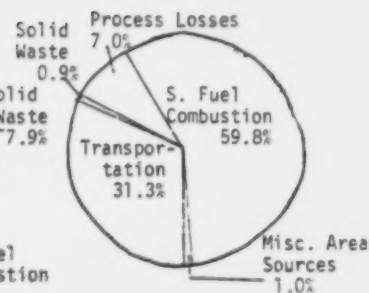
CARBON MONOXIDE



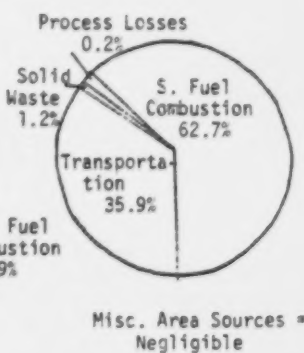
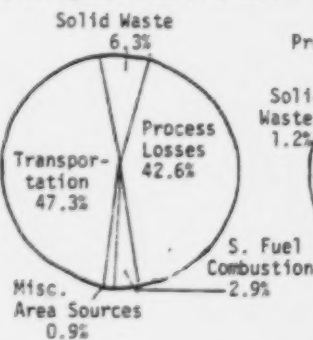
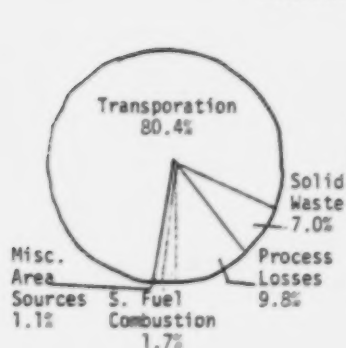
HYDROCARBONS



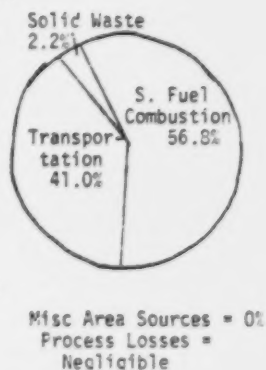
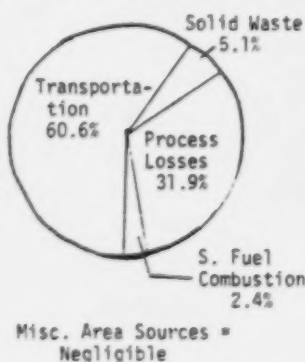
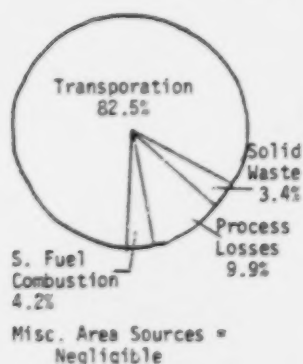
NITROGEN OXIDES



EVANSVILLE-OWENSBORO-HENDERSON INTERSTATE AIR QUALITY CONTROL REGION*



HUNTINGTON-ASHLAND-PORTSMOUTH-IRONTON INTERSTATE AIR QUALITY CONTROL REGION



LOUISVILLE INTERSTATE AIR QUALITY CONTROL REGION *(All Regions Above Represent Kentucky Portions Only)

Figure 5.8 Relative Contributions of Regional Total Source Category Emissions To Regional Pollutant Totals.

Hydrocarbons (HC) emissions for the region were 68,379 tons or 17.7% of the state's total HC emissions. Transportation sources account for the most of the HC emissions (60.6%). Process loss emissions of hydrocarbons amounted to 31.9% of the regional HC, coming up second in rank. Miscellaneous process point sources contributed the bulk (66%) of the HC from process losses. This is attributable primarily to solvent emissions from paint spray booths and printing facilities in the region. Miscellaneous area source emissions were negligible relative to the regional total HC emissions.

Nitrogen Oxides (NO_x) emissions for 1970 in the Louisville Region amounted to 69,447 tons or 12.0% of the state's total NO_x emissions. Stationary fuel combustion sources emitted 56.8% of the total regional NO_x or 39,438 tons, making stationary fuel combustion the top ranking contributor of NO_x in the region. Transportation ranks second with 28,456 tons or 41.0% of the regional total NO_x . The percentage contribution of process losses was negligible and miscellaneous area sources was nil.

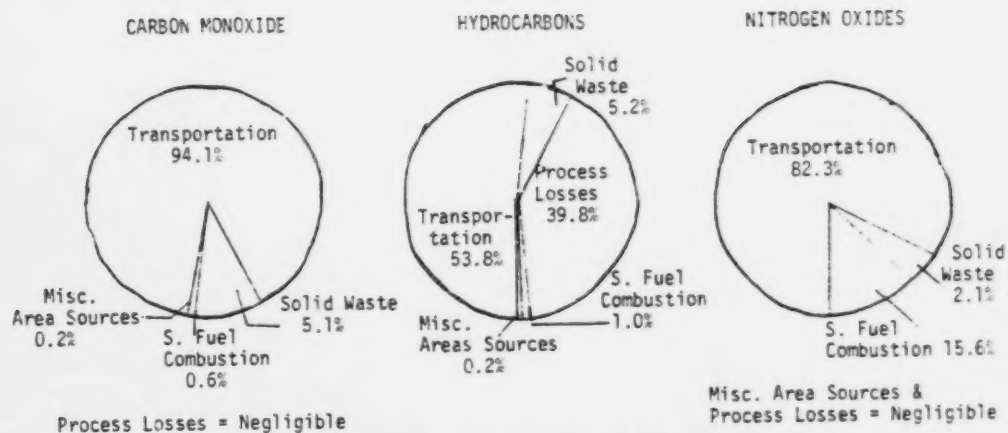
5.2.7 North Central Air Quality Control Region

Transportation sources in the region during 1970 contributed more carbon monoxide, hydrocarbons, and nitrogen oxides than any other source category as seen in Figure 5.9.

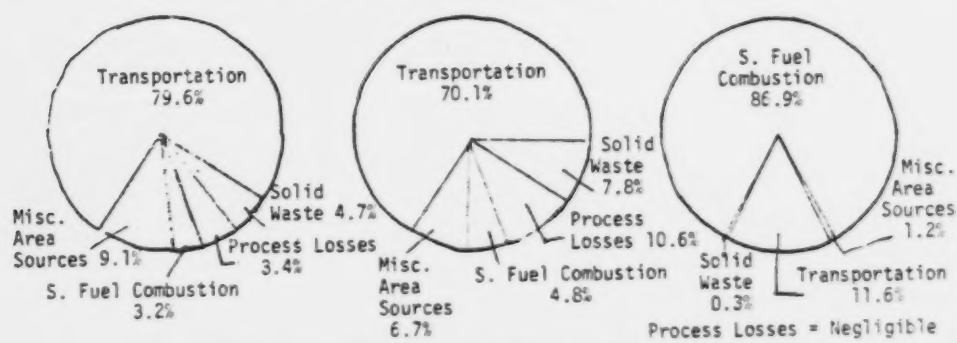
Carbon monoxide (CO) emissions in the North Central Region for 1970 amounted to 128,338 tons or 8.3% of Kentucky's total CO emissions. The second largest contributor to this regional total was solid waste disposal with 5.1% of the total. Emissions from fuel combustion and miscellaneous area sources were nearly insignificant with percentage contributions to the regional pollutant total of 0.6% and 0.2% respectively. Process losses contributed a negligible percentage, only 2 tons of CO being emitted in 1970 for the region.

Hydrocarbons (HC) emissions in the region for 1970 were 45,448 tons or 10.9% of the state total HC emissions. The second largest contributor to this total, following transportation, was process losses which contributed 39.8% of the regional total HC. More than 60% of the 18,076 tons of HC emitted from process sources in 1970 in the region came from food and agricultural industries or almost exclusively from the distilling industry. Thirty-four-plus percent of the process HC came from the chemical process industries. Solid waste disposal ranked third in the region as an HC source showing 5.2% of the regional total. Stationary fuel combustion source emissions, as well as emissions from miscellaneous area sources, were very minor with relative contributions of 1.0% and 0.2% respectively.

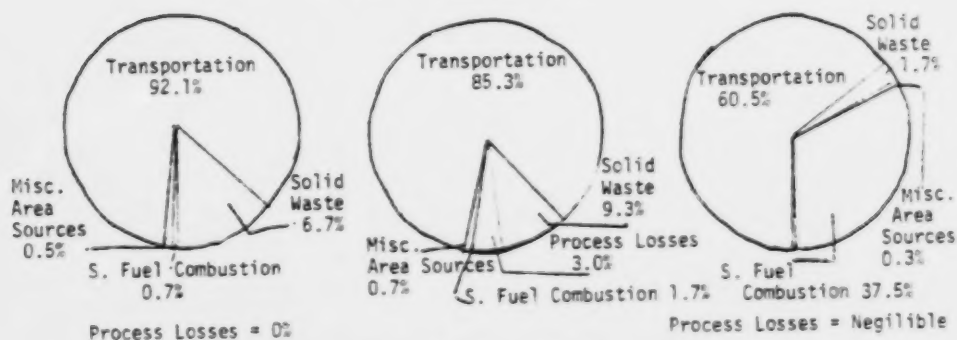
Nitrogen Oxides (NO_x) emissions in the North Central Region amounted to 26,676 tons or only 4.6% of the state's total NO_x emissions. This places the region as the second-lowest NO_x contributor of all the state's



NORTH CENTRAL AIR QUALITY CONTROL REGION



**PADUCAH-CAIRO INTERSTATE AIR QUALITY CONTROL REGION
(Kentucky Portion Only)**



SOUTH CENTRAL AIR QUALITY CONTROL REGION

Figure 5.9 Relative Contributions of Regional Total Source Category Emissions to Regional Pollutant Totals

regions. As Figure 5.9 shows, transportation was by far the largest contributor to the regional total, followed by stationary fuel combustion with 15.6% of the regional NO_x emissions. Solid waste disposal contributed only 2.1% of the regional total and the percentage contributions of process losses and miscellaneous area sources were negligible.

5.2.8 Paducah-Cairo Interstate Air Quality Control Region (Kentucky Portion)

Carbon Monoxide (CO) emissions in the Paducah-Cairo Region amounted to 201,464 tons in 1970 or 13.1% of the state's total CO emissions. Transportation had the highest relative contribution of 79.6% (160,426 tons). Second ranked was miscellaneous area sources (Primarily burning coal refuse) with 9.1% of the total regional CO. The three remaining categories, stationary fuel combustion, process losses, and solid waste disposal were nearly equal with relative contributions of 3.2%, 3.4% and 4.7% respectively.

Hydrocarbons (HC) emissions for the region were 46,191 tons or 11.1% of the state's total HC emissions. As in the case of CO for the region, transportation ranked highest in emissions of HC, accounting for 70.1% of the regional total hydrocarbons. Process losses, primarily chemical process industries ranked second with 10.6%. The next three categories in order of descending rank were solid waste disposal (7.8%), miscellaneous area sources (6.7%) and stationary fuel combustion with 4.8% of the regional total HC.

Nitrogen Oxides (NO_x) emissions for this region were 243,164 tons. This is 42.1% of the state's total NO_x emissions. Consequently, the Paducah-Cairo region is the highest regional emitter of NO_x . Stationary fuel combustion sources are the largest contributors of NO_x . These account for 86.9% of the region's total NO_x emissions. Point source stationary fuel combustion facilities emitted the bulk (99%) of this category's 211,263 tons in 1970. Coal-fired power plants in the region accounted for 98% of the region's total stationary fuel combustion NO_x emissions. Transportation ranked second in the region as an NO_x emitting source category, accounting for 11.6% of the total regional NO_x . Miscellaneous area sources and solid waste disposal ranked third and fourth with respective contributions of 1.2% and 0.3%. Process losses were negligible with respect to the NO_x regional total.

5.2.9 South Central Air Quality Control Region

Carbon Monoxide (CO) emissions in the region for 1970 amounted to 152,361 tons or 9.9% of Kentucky's total CO emissions. Transportation accounts for 92.1% of the regional total CO. Solid waste disposal ranked second, accounting for only 6.7% of the regional total. Emissions from stationary fuel combustion and miscellaneous area sources were very small with relative contributions of 0.7% and 0.5% respectively. There were no CO emissions from process losses in the region in 1970.

Hydrocarbons (HC) emissions in the region were 33,017 tons or 8.0% of the state's total HC emissions. By far, the largest HC-emitting category in the region was transportation which accounted for 85.3% of the hydrocarbons in the region. Solid waste disposal ranked second with 3,069 tons of HC emissions or 9.3% of the regional total. The three remaining categories in order of descending relative contributions are process losses (3.0%), stationary fuel combustion (1.7%) and miscellaneous area sources with 0.7% of the regional total HC emissions.

Nitrogen Oxides (NO_x) emissions in the South Central region for 1970 were 40,161 tons. This was 7.0% of the state's total NO_x emissions. Sixty and one-half percent of the total NO_x for the region resulted from transportation. Second in rank was stationary fuel combustion which accounted for 37.5% of the region's total NO_x emissions. Point sources account for the bulk (81%) of the stationary fuel combustion total. A power plant and a liquid hydrocarbon plant collectively made up about 80% of these point source emissions. Solid waste disposal and miscellaneous area sources rank third and fourth with relative contributions to the NO_x regional total of 1.7% and 0.3% respectively. Process losses of NO_x in the region were negligible relative to the regional total, the total NO_x emissions from this category being only 21 tons.

(2.0) 5.3 AIR QUALITY DATA

Data showing existing air quality with respect to nitrogen dioxide, photochemical oxidants, and carbon monoxide for the Metropolitan Cincinnati and the Louisville Interstate Air Quality Control Regions, are submitted in Tables 5.8 and 5.9. These regions are classified Priority I with respect to nitrogen dioxides and photochemical oxidants and Priority III with respect to carbon monoxide. The data were obtained through a cooperative three month study¹ coordinated by Office of Air Programs, Environmental Protection Agency during the month of June through September, 1971.

5.3.1 Metropolitan Cincinnati Interstate Air Quality Control Region

Air monitoring for nitrogen dioxide, using the 24-hour bubbler type samplers, was conducted in two areas; Covington, Kentucky and Cincinnati, Ohio. Carbon monoxide and photochemical oxidants data were gathered at the Cincinnati CAMP station operated by the City of Cincinnati, Air Pollution Control Office. The data are submitted in Table 5.8.

The national and state primary standard of 0.05 parts per million, annual arithmetic mean for nitrogen dioxide was exceeded at both sites.

The one-hour national and state standard for carbon monoxide of 35 parts per million was not exceeded. However the eight-hour national and state carbon monoxide standard of 9 parts per million was exceeded.

TABLE 5.8 SUMMARY OF AIR QUALITY DATA AS SITES WITHIN THE
METROPOLITAN CINCINNATI INTERSTATE AIR QUALITY CONTROL REGION (PM₁₀)

POLLUTANT	STA. NO.	SITE LOCATION UTM ^b (km)			PERIOD	NO. OBS.	MAXIMUM 1-HOUR	MAXIMUM 8-HOUR	MAXIMUM 24-HOUR	ANNUAL ARITHMETIC MEAN
		ADDRESS	NORTHING	EASTING						
Carbon Monoxide ^d (CO)	CAMP	Central & Cincinnati			5/17/71-9/19/71	3024 ^c	15.0	10.2	--	--
Photochemical Oxidants ^e (O ₃)	CAMP	Central & Ann Cincinnati			5/17/71-9/19/71	180 ^c	0.124	--	--	--
Nitrogen Dioxide ^f (NO ₂)	35	7th & Scott Covington	4328.8	715.5	7/5/71-9/30/71	29 ^f	--	--	0.177	0.085

a. 1 ppm CO = 1.145 mg/m³, referenced to 25°C and 760 mm Hg

1 ppm O₃ = 1963 ug/m³, referenced to 25°C and 760 mm Hg

1 ppm NO₂ = 2000 ug/m³, referenced to 25°C and 760 mm Hg

b. UTM Zone 16

c. One-hour averages

d. Non dispersive Infrared Method - Continuous

e. Colorimetric Neutral Potassium Iodide Method - Continuous

f. Jacobs-Hochheiser Method - 24-hour bubbler sample every 3 days

Both the national and state primary standards for photochemical oxidants of 0.08 parts per million, 1-hour maximum, corrected for contribution of nitrogen dioxide and nitric oxide, were exceeded.

5.3.2 Louisville Interstate Air Quality Control Region

Air quality monitoring for nitrogen dioxide, photochemical oxidants (measured as ozone) and carbon monoxide was conducted within the city limits of Louisville. The sampling sites were tended by the staff of the Air Pollution Control District of Jefferson County. The data are submitted in Table 5.9.

The estimated annual arithmetic mean for nitrogen dioxide in Louisville exceeded national and state primary standard of 0.05 parts per million.

The carbon monoxide levels measured were in excess of the national and state primary standard of 9 parts per million, 8-hour average, on two separate days.

Levels for photochemical oxidants measured as ozone exceeded both the national and state primary standard of 0.08 parts per million, one-hour maximum.

(2.0) 5.4 REFERENCES

1. 1971 Implementation Plan Summer Study for Carbon Monoxide, Nitrogen Dioxide and Photochemical Oxidants, coordinated by Division of Atmospheric Surveillance, Environmental Protection Agency, Research Triangle Park, North Carolina, 27711.
2. Control of Air Pollution From New Motor Vehicles and New Motor Vehicle Engines, 45 CFR 1201.
3. Economic Projections for Air Quality Control Regions, U.S. Department of Commerce, June 10, 1970.
4. Requirements for Preparation, Adoption, and Submittal of Implementation Plans published in the Federal Register, August 14, 1971 (42 CFR 420) pursuant to requirements of the Clean Air Act (as amended).

TABLE 5.9. SUMMARY OF AIR QUALITY DATA AT THE KENTUCKY SITES WITHIN THE LOUISVILLE INTERSTATE AIR QUALITY CONTROL REGION (PPM³)

POLLUTANT	STA. NO. ^g	SITE LOCATION UTM ^b (km)		PERIOD	NO. OBS.	MAXIMUM 1-Hr.	MAXIMUM 8-Hr.	MAXIMUM 24-Hr.	ANNUAL ARITHMETIC MEAN
		ADDRESS	NORTHING	EASTING					
Carbon Monoxide ^d (CO)	31	621 W. Jefferson St., Louisville	4234.6	608.3	7/12/71-9/28/71	1584 ^c	10.8	-	-
Photochemical Oxidants ^e (O ₃)	48	V.A. Hosp., Zorn Ave., Louisville	4236.4	614.0	7/1/71-9/30/71	1836 ^c	-	-	-
Nitrogen Dioxide ^f (NO ₂)	46	Eastern Pkwy. & 3rd., Louisville	4229.9	608.9	7/5/71-9/30/71	29 ^f	-	0.162	0.086

a. 1 ppm CO = 1.145 mg/m³, referenced to 25°C and 760 mm Hg

1 ppm O₃ = 1963 µg/m³, referenced to 25°C and 760 mm Hg

1 ppm NO₂ = 2000 µg/m³, referenced to 25°C and 760 mm Hg

b. UTM Zone 16

c. One-hour averages

d. Non-dispersive Infrared Method - Continuous

e. Chemiluminescence Method - Continuous

f. Jacobs-Hochheiser Method - 24-hour bubbler sample every 3 days

g. Jefferson County Air Pollution Control District Designations

REGULATION NO. AP-4

KENTUCKY AIR POLLUTION
CONTROL COMMISSION

(50.2) SUBJECT: Control of Sulfur Compound Emissions

(51.6) 1. Emissions from Indirect Heat Exchangers

(1) New Installations of Indirect Heat Exchangers

- (a) No person shall cause, suffer, allow or permit the emission of sulfur dioxide into the open air from any new installations of indirect heat exchangers having a rated capacity of 250 million BTU per hour or more heat input, in excess of:
 - (i) 0.8 lb. per million BTU heat input, maximum 2-hour average, when liquid fuel is burned;
 - (ii) 1.2 lb. per million BTU heat input, maximum 2-hour average, when solid fuel is burned.
- (b) No person shall cause, suffer, allow or permit the emission of sulfur dioxide into the open air from any new installation of indirect heat exchangers of less than 250 million BTU/hour in excess of those amounts listed in Table 4-1 and shown in Figures 4.1 and 4.2 all of which are incorporated as part of this regulation.

TABLE 4-1

ALLOWABLE SULFUR DIOXIDE EMISSION
BASED ON HEAT INPUT CAPACITY

MM BTU/Hour Heat Input	NEW INSTALLATION	
	Liquid Fuel	Solid Fuel
10 or less	2.50	4.0
50	1.40	2.4
100	1.10	1.7
150	0.95	1.4
200	0.86	1.3
250 or more	0.80	1.2

- (2) Existing Installations of Heat Exchangers--Regions classified as Priority I with respect to sulfur dioxide.
- (a) No person shall cause, suffer, allow or permit the emission of sulfur dioxide into the open air from any existing installation of indirect heat exchangers having a rated capacity of 250 BTU per hour or more heat input, in excess of:
 - (i) 0.8 lb. per million BTU heat input, maximum 2-hour average, when liquid fuel is burned;
 - (ii) 1.2 lb. per million BTU heat input, maximum 2-hour average when solid fuel is burned.
 - (b) No person shall cause, suffer, allow or permit the emission of sulfur dioxide into the open air from any existing installation of indirect heat exchangers of less than 250 million BTU per hour input, in excess of those amounts listed in Table 4.2, and shown in Figures 4.1 and 4.2, all of which are incorporated as part of this regulation.
- (3) Existing Installations of Indirect Heat Exchangers--Regions classified as Priority II with respect to sulfur dioxide.
- (a) No person shall cause, suffer, allow or permit the emission of sulfur dioxide into the open air from any existing installations of indirect heat exchangers having a rated capacity of 500 BTU per hour or more heat input, in excess of:
 - (i) 1.5 lb. per million BTU heat input, maximum 2-hour average, when liquid fuels are burned;
 - (ii) 2.0 lb. per million BTU heat input, maximum 2-hour average, when solid fuel is burned.
 - (b) No person shall cause, suffer, allow or permit the emission of sulfur dioxide into the open air from any existing installation of indirect heat exchangers of less than 500 million BTU per hour heat input, in excess of those amounts listed in Table 4.2, and shown in Figures 4.1 and 4.2, all of which are incorporated as part of this regulation.

(4) Existing Installations of Indirect Heat Exchangers--
Regions classified as Priority III with respect to sulfur dioxide.

(a) No person shall cause, suffer, allow or permit the emission of sulfur dioxide into the open air from any existing installations of indirect heat exchangers having a rated capacity of 1000 million BTU per hour or more heat input, in excess of:

(i) 2.0 lb. per million BTU heat input, maximum 2-hour average, when liquid fuel is burned;

(ii) 3.5 lb. per million BTU heat input, maximum 2-hour average, when solid fuel is burned.

(b) No person shall cause, suffer, allow or permit the emission of sulfur dioxide into the open air from any existing installation of indirect heat exchangers of less than 1000 million BTU per hour heat input, in excess of those amounts listed in Table 4.2, and shown in Figures 4.1 and 4.2, all of which are incorporated as part of this regulation.

(5) Maximum Emissions from Indirect Heat Exchangers

(a) No person shall construct any new indirect heat exchanger or modify any existing indirect heat exchanger so that its total emissions exceeds 500 tons of sulfur dioxide per day.

(b) No person shall construct any new indirect heat exchanger or modify any existing indirect heat exchanger where two or more indirect heat exchangers, including that indirect heat exchanger for which construction or modification is proposed, and which individually emit 100 tons per year or more of sulfur dioxide, are contained within a circle 10 miles in diameter, and the total emissions of all such indirect heat exchangers is 750 tons per day of sulfur dioxide.

(6) For any given indirect heat exchanger air contaminant source the combined total capacity of all fuel burning units in that air contaminant source shall determine the amount of allowable sulfur dioxide emissions.

(51.18)

2. Emissions from Sulfuric Acid Plants

(1) New Installations of Sulfuric Acid Plants

No person shall cause, suffer, allow or permit the following emission into the open air from any new installation of sulfuric acid plants:

- (a) Sulfur Dioxide in the effluent in excess of 4 pounds per ton of acid (98%) produced, maximum 2-hour average;
- (b) Sulfur acid mist in the effluent in excess of 0.15 pounds per tons of acid (98%) produced, maximum 2-hour average, expressed as H_2SO_4 ;
- (c) A visible emission which is equal to or greater than 10 percent opacity (as dark as, or darker than, the shade considered to be No. 1/2 on the Ringelmann Chart).

(2) Existing Installations of Sulfuric Acid Plants

No person shall cause, suffer, allow or permit the following emissions into the open air from any existing installations of dry gas operation sulfuric acid plants:

- (a) Sulfur dioxide in the effluent in excess of 27 pounds per ton of acid (98%) produced, maximum 2-hour average;
- (b) Sulfur acid mist in the effluent in excess of 0.90 pound per ton of acid (98%) produced, maximum 2-hour average;
- (c) A visible emission which is greater than 20 percent opacity (darker in shade than that designated as No. 1 on the Ringelmann Chart).

(51.2)
(51.15)

3. Emissions from Petroleum Refineries, By-Product Coke Plants, and Other Processes

- (1) In regions classified as Priority I with respect to sulfur dioxide, no person shall cause, suffer, allow or permit the emission or combustion of any refinery process gas stream or any other process gas stream that contains H_2S in concentration greater than 10 grains per 100 cubic feet of gas without removal of the hydrogen sulfide in excess of this concentration.

- (2) In regions classified as Priority I with respect to sulfur dioxide, no person shall cause, suffer, allow or permit the emission of any process gas stream that contains sulfur dioxide in a concentration greater than 2000 parts per million by volume.

(51.14) 4. Emissions from Sulfite Pulp Mills

- (1) No person shall cause or permit the total sulfite pulp mill sulfur oxide emissions from blow pits, washer vents, storage tanks, digester relief, recovery system, etc. to exceed 9.0 lb. per air dried ton of pulp produced.

(51.14) 5. Emissions from Kraft (Sulfate) Pulp Mills

(1) Definitions

For the purpose of this section, the following definitions apply:

- (a) Total Reduced Sulfur (TRS)--means all reduced sulfur compounds including but not limited to hydrogen sulfide (H_2S), methyl mercaptan, dimethyl sulfide and dimethyl disulfide, expressed in terms of hydrogen sulfide (H_2S).
- (2) No person shall cause or permit total reduced sulfur emissions from the recovery furnace of any kraft pulp mill in excess of 0.5 pounds per ton of air dried pulp produced, or in excess of an exit stack gas concentration of 17.5 parts per million by volume, whichever is more restrictive.
- (3) No person shall cause or permit the emission of various noncondensable gas streams from brown stack washers, digester relief, blow tank relief evaporator hot wells, multiple effect evaporators, or weak and strong black liquor storage tanks containing total reduced sulfur in a kraft pulp mill unless treated by thermal oxidation or an equivalent method.

(6.0) 6. Time Schedule for Compliance

- (1) For the purpose of this section, the following time tables shall apply, however, all air contaminants sources covered under this section are required to submit a control plan and schedule for compliance as outlined in AP-1, Sec. 11(2):

- (a) Those indirect heat exchangers described in Section 1(2) submit a control plan and schedule no later than January 1, 1973, with a compliance date of no later than July 1, 1977;
- (b) Those indirect heat exchangers described in Section 1(3) submit a control plan and schedule no later than January 1, 1973, with a compliance date of no later than July 1, 1978;
- (c) Those indirect heat exchangers described in Section 1(4) submit a control plan and schedule no later than January 1, 1973, with a compliance date of no later than July 1, 1979;
- (d) All other air contaminant sources governed by this section shall comply as specified in AP-1, Sec. 11.

(9.0)

7. Testing and Sampling

- (1) Stack tests to determine compliance with the sulfur dioxide emission standards of Section 1 shall be conducted in accordance with the applicable procedures of Method 1, 2, 3, and 6 as specified in AP-1, Sec. 7(3) of these regulations.
- (2) Stack tests to determine compliance with the sulfur dioxide emission standards of Sections 2(1) and 2(2) shall be conducted in accordance with the applicable procedures of Methods 1, 2, 3, and 8 as specified in AP-1, Sec. 7(3) of these regulations.

(3)

ALLOWABLE EMISSION (LB/10⁶ BTU)

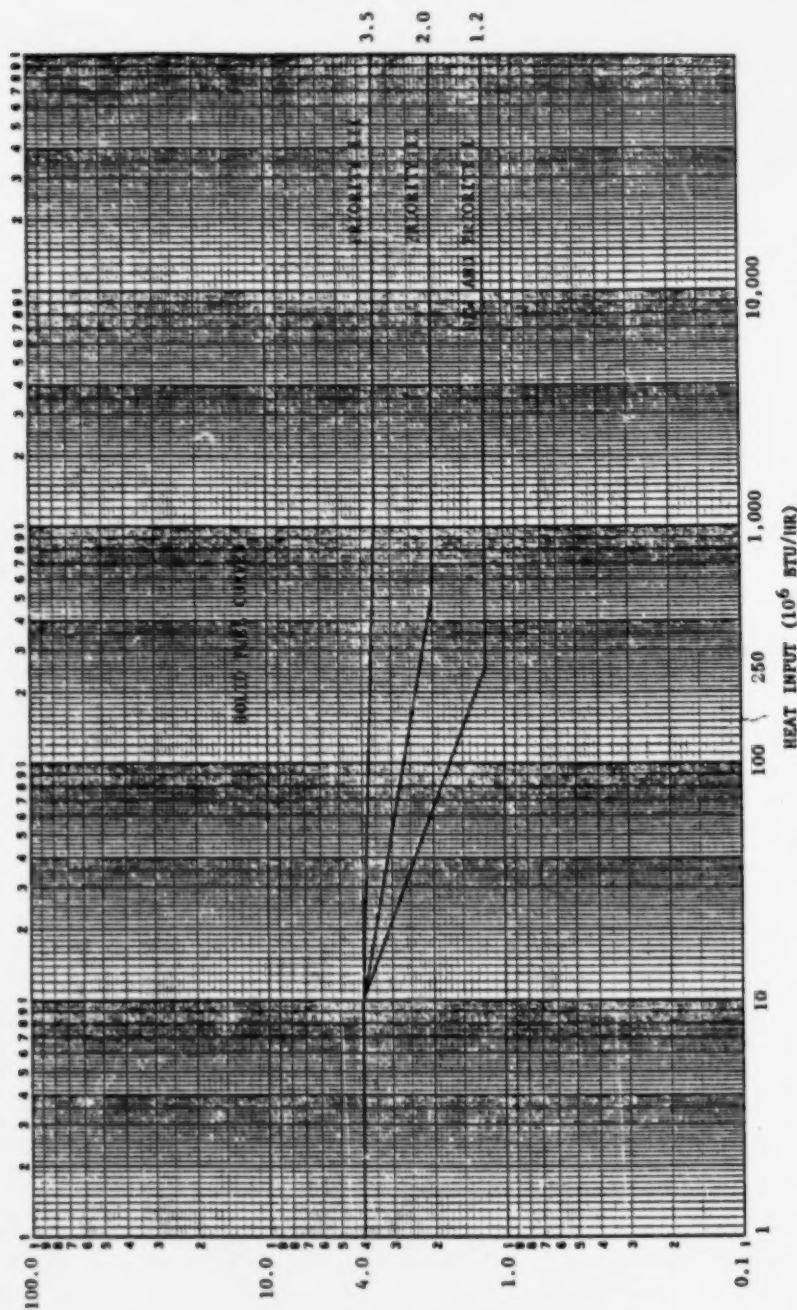


FIGURE 4.1 ALLOWABLE SULFUR DIOXIDE EMISSIONS BASED ON HEAT INPUT CAPACITY

(4)

ALLOWABLE EMISSION (LB/10⁶ BTU)

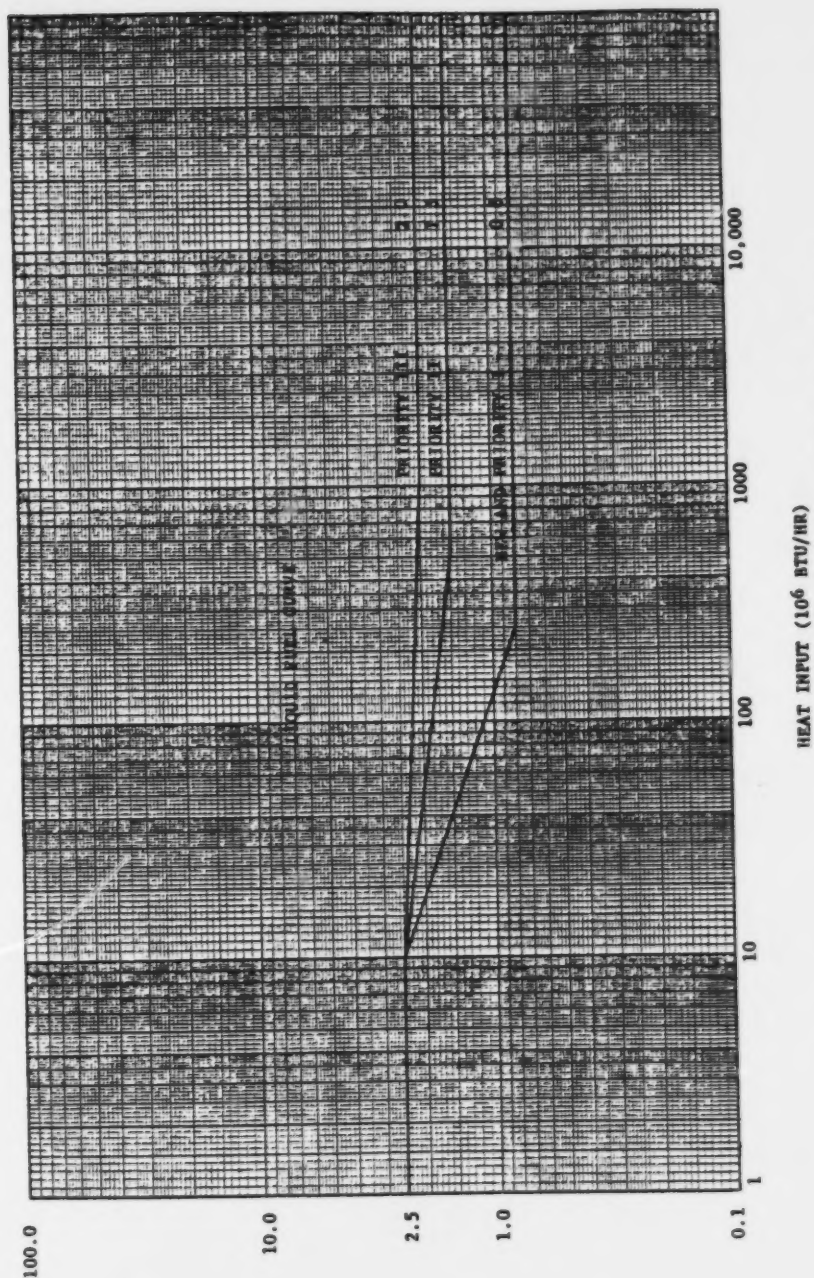


FIGURE 4.2 ALLOWABLE SULFUR DIOXIDE EMISSIONS BASED ON HEAT INPUT CAPACITY

TABLE 4.2
ALLOWABLE SULFUR DIOXIDE EMISSIONS
BASED ON HEAT INPUT CAPACITY

MM BTU/HOUR HEAT INPUT	EXISTING INSTALLATION					
	PRIORITY I		PRIORITY II		PRIORITY III	
	(fuel:)	Liquid	Solid	Liquid	Solid	Liquid
10 or less	2.50	4.0	2.5	4.0	2.50	4.0
50	1.14	2.2	2.02	3.0	2.32	3.8
100	1.11	1.7	1.85	2.7	2.24	3.7
150	0.96	1.5	1.75	2.5	2.20	3.7
250	0.8	1.2	1.64	2.3	2.14	3.6
500	0.8	1.2	1.5	2.0	2.07	3.6
1,000	0.8	1.2	1.5	2.0	2.00	3.5
10,000	0.8	1.2	1.5	2.0	2.00	3.5

REGULATION NO. AP-8

KENTUCKY AIR POLLUTION
CONTROL COMMISSION

(51.2) SUBJECT: Control of Coal Refuse Area

(2.0) 1. Applicability

- (1) The provisions of AP-1, Sec. 4(1) and 5(1) shall apply to the operation of coal refuse disposal areas.
- (2) The procedures outlined in this section will be used as a basis for approval of coal refuse disposal areas:
 - (a) Coal refuse is not to be deposited on any coal refuse disposal area unless the coal refuse is deposited in such a manner as to minimize the possibility of ignition of the coal refuse;
 - (b) Coal refuse disposal areas shall not be so located with respect to mine openings, tipplers, or other mine buildings, unprotected coal outcrops or steam lines, that these external factors will contribute to the ignition of the coal refuse on such coal refuse disposal areas;
 - (c) Vegetation and combustible materials shall not be left on the ground at the site where a coal refuse pile is to be established, unless it is rendered inert before coal refuse is deposited on such site;
 - (d) Coal refuse shall not be dumped on deposited on a coal refuse pile known to be burning;
 - (e) Material with low ignition points used in the production or preparation of coal, including but not limited to wood, brattice cloth, waste paper, rags, oil and grease, shall not be deposited on any coal refuse disposal area or in such proximity as will reasonably contribute to the ignition of a coal refuse disposal area;
 - (f) The site of the coal refuse disposal area is to be such that water run off from the adjacent area will not drain into the coal refuse;

- (g) Coal refuse is to be deposited in such manner that it will not slide or shift so as to enhance the possibility of ignition;
- (h) Garbage, trash, household refuse, and like materials shall not be deposited on or near any coal refuse disposal area.

(51.2) 2. Deliberate Ignition Prohibited

- (1) Deliberate ignition of a coal refuse disposal area is prohibited.
- (2) The deliberate ignition of a coal refuse disposal area or the ignition of any materials on such an area by any person or persons is prohibited.

(51.2) 3. Burning Coal Refuse Disposal Areas

- (1) Each burning coal refuse disposal area will be considered on an individual basis by the Commission. After considering the established facts and circumstances of the particular case, the Commission will determine and may order the effectuation of those air pollution control measures which the Commission deems reasonably adequate for each such coal refuse disposal area.
- (2) With respect to all other burning coal refuse disposal areas, the person responsible for such coal refuse disposal areas or the land on which such coal refuse disposal areas are located shall use due diligence to control air pollution from such coal refuse disposal areas. The Commission shall determine what constitutes due diligence.
- (3) When the Commission determines that air pollution exists or may be created, the person responsible for such coal refuse disposal area or the land owner on which such coal refuse disposal area is located shall submit to the Commission a satisfactory program setting forth methods and procedures to eliminate, prevent, or reduce such air pollution. This program shall be submitted within thirty (30) days after notification and shall contain sufficient information to establish that such program can be executed with due diligence.

REGULATION NO. AP-9

KENTUCKY AIR POLLUTION
CONTROL COMMISSION

(4.0) SUBJECT: Ambient Air Quality Standards

(2.0) 1. Purpose of Standards and Expression on Non-Degradation Intention

- (1) Primary ambient air quality standards define levels of air quality which the Commission judges are necessary, with an adequate margin of safety, to protect the public health. Secondary ambient air quality standards define levels of air quality which the Commission judges necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant. Such standards are subject to revision, and additional primary and secondary standards may be promulgated as the Commission deems necessary to protect the public health and welfare.
- (2) In the establishment of these air quality standards, it is the intention of the Commission to prohibit further significant and avoidable deterioration of air quality in areas where air quality presently exists which is numerically equal to or less than the standards expressed herein.
- (3) The proposal, promulgation, or revision of these primary and secondary ambient air quality standards shall not prohibit any District from establishing ambient air quality standards for that District or any portion thereof which are more stringent than are the standards herein.
- (4) No person or air contaminant source shall cause, suffer, allow or permit the air quality standards specified herein to be exceeded.

(4.0) 2. Air Contaminant Concentrations

The following air contaminant concentrations shall apply at any single point location:

	<u>Primary Standard</u>	<u>Secondary Standard</u>
(1) Sulfur Oxides (Sulfur Dioxide)-- ug/M ³	80 (0.03 ppm)	60 (0.02 ppm)
Annual Arithmetic Mean, not to exceed	365 (0.14 ppm)	---

	<u>Primary Standard</u>	<u>Secondary Standard</u>
(1) Sulfur Oxides (Sulfur Dioxide-- $\mu\text{g}/\text{M}^3$ Annual Arithmetic Mean, not to exceed Maximum Twenty-Four-Hour Average Maximum Three-Hour Average	80(0.03ppm) 365(0.14ppm) ---	60(0.02ppm) --- 1300(0.50ppm)
(2) Particulate Matter		
(a) Suspended Particulates-- $\mu\text{g}/\text{M}^3$ Annual Geometric Mean not to exceed Maximum Twenty-Four-Hour Average	75 260	60 150
(b) Setteable Particulates (Dustfall) (Tons/square mile/ measured as total water solubles & insolubles) Maximum Three-Month Average	---	15(5.25/gm/sq. meter/mo.)
(c) Soiling Index Annual Geometric Mean, not to exceed Maximum Three-Month Average Maximum Twenty-Four-Hour Average	--- --- ---	0.4 COH/1000 linear ft. 0.5 COH/1000 linear ft.
(3) Carbon Monoxide-- mg/M^3 Maximum Eight-Hour Average Maximum One-Hour Average	6.0 COH/1000 linear ft. 10(9ppm) 40(35ppm)	3.0 COH/1000 linear ft. Same as Primary Same as Primary
(4) Photochemical Oxidants (measured as Ozone)-- $\mu\text{g}/\text{M}^3$ Maximum One-Hour Average	160(0.08ppm)	Same as Primary
(5) Total Nonmethane Hydrocarbons (measured as C)-- $\mu\text{g}/\text{M}^3$ Maximum Three-Hour Morning Average (6-9 A.M.)	160(0.24ppm)	Same as Primary
(6) Nitrogen Oxides-- $\mu\text{g}/\text{M}^3$ Annual Arithmetic Mean, not to exceed	100(0.05ppm)	Same as Primary
(7) Hydrogen Sulfide-- $\mu\text{g}/\text{M}^3$ Maximum One-Hour Average	---	14(0.01ppm)
(8) Hydrogen Fluoride-- $\mu\text{g}/\text{M}^3$ Maximum One-Month Average Maximum One-Week Average Maximum Twenty-Four-Hour Average Maximum Twelve-Hour Average	0.82(1ppb) 1.64(2ppb) 2.86(3.5ppb) 3.68(4.5ppb)	--- --- --- ---

	<u>Primary Standard</u>	<u>Secondary Standard</u>
(9) Total Fluorides--ppm Dry weight basis (as F-) in and on forage for consumption by grazing ruminants The following concentrations are not to be exceeded: Average concentrations of monthly samples over growing season (not to exceed 6 consecutive months)	40 ppm (w/w)	---
Maximum Two-Month Average	60 ppm (w/w)	---
Maximum One-Month Average	80 ppm (w/w)	---
(10) Orders At any time not to equal or exceed	---	7 dilutions

(6.0) 3. Time Schedule for Achieving Ambient Air Quality Standards

- (1) Primary air quality standards shall be achieved within three years of the effective date of this regulation.
- (2) Secondary air quality standards shall be achieved within a reasonable period of time but in no case longer than six years after the effective date of this regulation except as provided in AP-4, Sec. 6.

(9.0) 4. Method of Measurement

- (1) Air contaminants shall be measured by the method or methods and frequency listed in Table 9.1 or by such other methods approved by the Kentucky Air Pollution Control Commission.
- (2) Annual averages and three-month averages shall be determined on the basis of any consecutive twelve-month interval or any consecutive three-month interval, respectively.

(2.0) 5. Abbreviations Used in This Regulation

gm = gram	mo = month
mg = milligram	COH = coefficient of haze
µg = microgram	ppm = parts per million by volume
M = meter	ppb = parts per billion by volume
cm = centimeter	w/w = weight by weight
sq = square	

(2.0)

6. Conversion Between Volume and Mass Units of Concentration

Employing standard conditions of 25 degrees centigrade (Celsius) temperature and 760 millimeters of mercury pressure, the following equations are used to convert between volume units (ppm) and mass units ($\mu\text{g}/\text{M}^3$).

$$\text{ppm} = \frac{(\mu\text{g})}{\text{M}^3} \times \frac{0.02445}{\text{Molecular weight, gm/mole}}$$

$$\text{g}/\text{M}^3 = (\text{ppm}) \times \frac{\text{Molecular weight, gm/mole}}{0.02445}$$

Based on the above equations the following conversion factors are applied:

<u>Pollutant</u>	To Convert From PPM To $\mu\text{g}/\text{M}^3$	To Convert From $\mu\text{g}/\text{M}^3$ To PPM
	<u>Multiply By</u>	<u>Multiply By</u>
Sulfur Dioxide	2620	0.00038
Hydrogen Sulfide	1391	0.00072
Carbon Monoxide	1145	0.00087
Ozone	1963	0.00051
Hydrogen Fluoride	818	0.00122
Methane	655	0.00153
Nitrogen Dioxide	2000	0.00050

(2.0) 7. Reference Methods of Air Contaminants Measurements

TABLE 9.1
REFERENCE METHODS OF AIR CONTAMINANTS MEASUREMENTS

	MEASUREMENT METHOD ^p	MINIMUM FREQUENCY OF SAMPLING
Particulate Matter Suspended Settleable	Gravimetric, High Volume Sampler ^a Light Transmittance, / ISI Tape Sampler ^c Gravimetric, Dustfall Iars ^d	One 24-hour sample every 6 days ^b One sample every 2 hours One 1-month sample per month
Sulfur Dioxide	Pararosaniline ^a or equivalent ^e	One 24-hour gas bubbler sample every 6 days ^b Twelve 2-hour gas bubbler samples every 6 days ^f Continuous
Carbon Monoxide	Non-dispersive infrared ^a or equivalent ^g	Continuous
Photochemical Oxidants	Gas Phase Chemiluminescence ^a or equivalent ^h	Continuous
Nitrogen Dioxide	Jacobs-Hochheiser ^a or equivalent ⁱ	One 24-hour gas bubbler sample every 6 days ^b Continuous
Non-methane Hydrocarbons	Flame ionization gas chromatographic separation ^a or equivalent ⁱ	Semi-Continuous
Hydrogen Sulfide	Lead Acetate Tape Sampler ^k or equivalent ^e	One sample every hour Twelve 1-hour samples every 6 days ^f
Hydrogen Fluoride	SPADNS Colorimetric ^m or equivalent ⁿ	One 12-hour sample every 6 days ^b
Odor	Dilution ^o	

- a. Method described in the National Primary and Secondary Ambient Air Quality Standards published in the Federal Register on April 30, 1971 (36 F.R. 8186)
- b. Equivalent to 61 random samples per year
- c. Hemeon, Haines and Ide, Air Repair, 3, 22 (1953)
- d. ASTM D1739-62
- e. Equivalent Methods are (1) Gas Chromatographic Separation, (2) Flame Photometric Detection (provided interfering sulfur compounds present in significant quantities are removed), (3) Coulometric Detection (provided oxidizing and reducing interference such as O₃, NO₂, and H₂S are removed), and (4) the automated Pararosaniline procedures
- f. Equivalent to 742 random samples per year
- g. Equivalent Method is Gas Chromatographic Separation--Catalytic Conversion--Flame Ionization Detection
- h. Equivalent Methods are (1) Potassium Iodide Colorimetric Detection (provided a correction is made for SO₂ and NO₂), (2) U V Photometric Detection of ozone (provided compensation is made for interfering substances), and (3) Chemiluminescence Methods differing from that of the referenced method
- i. Equivalent Method is continuous Saltzman Method Anal. Chem., 26, 1951 (1954)
- j. Equivalent Method is activated Charcoal prescribing--Flame Ionization Detection, Ortman, Anal. Chem., 29, 1349 (1957)
- k. Sensenbaugh and Hemeon, Air Repair, 4, 5 (1954)
- l. Equivalent Method is Methylene Blue--Jacob, Braverman, Hochheiser, Anal. Chem., 29, 1349 (1957)
- m. Bellacke and Schouboe, Anal. Chem., 30, 2032 (1958)
- n. Equivalent Method is utilizing Fluoride Ion Selective Electrode, Hardwood, Water Research, 3, 273 (1969)
- o. Scentometer Method "Air Pollution", A.C. Stern, ed., Vol. 2, Academic Press, New York, 1968
- p. Other methods together with those specified under footnotes (e), (g) and (h) will be considered equivalent if they meet the following performance specifications:

SPECIFICATION	POLLUTANTS		
	SULFUR DIOXIDE	CARBON MONOXIDE	PHOTOCHEMICAL OXIDANTS (corrected for NO ₂ and SO ₂)
Range	0-2,620ug/m ³ (0-1 ppm)	0-58mg/m ³ (0-50 ppm)	0-880ug/m ³ (0-0.5 ppm)
Minimum detectable sensitivity	26ug/m ³ (0.01 ppm)	0.6mg/m ³ (0.5 ppm)	20ug/m ³ (0.01 ppm)
Rise time, 90 percent	5 minutes	5 minutes	5 minutes
Fall time, 90 percent	5 minutes	5 minutes	5 minutes
Zero drift	+1 percent per day & ±2 percent per 3 days	+1 percent per day & ±2 percent per 3 days	+1 percent per day & ±2 percent per 3 days
Span drift	+1 percent per day & ±2 percent per 3 days	+1 percent per day & ±2 percent per 3 days	+1 percent per day & ±2 percent per 3 days
Precision	±2 percent	±4 percent	±4 percent
Operation period	3 days	3 days	3 days
Noise	±0.5 percent (full scale)	±0.5 percent (full scale)	±0.5 percent (full scale)
Interference Equivalent	26ug/m ³ (0.01 ppm)	1.1mg/m ³ (1 ppm)	20ug/m ³ (0.01 ppm)
Operating temperature fluctuation	±5°C.	±5°C.	±5°C.
Linearity	2 percent (full scale)	2 percent (full scale)	2 percent (full scale)

The various specifications are defined as follows:

Range -- The minimum and maximum measurement limits;

Minimum detectable sensitivity -- The smallest amount of input concentration which can be detected as concentration approaches zero;

Rise time 90 percent -- The interval between initial response time and time to 90 percent response after a step increase in inlet concentration;

Fall time 90 percent -- The interval between initial response time and time to 90 percent response after a step decrease in inlet concentration;

Zero drift -- The change in instrument output over a stated time period of unadjusted continuous operation, when the input concentration is zero;

Span drift -- The change in instrument output over a stated period of unadjusted continuous operation, when the input concentration is a stated upscale value;

Precision -- The degree of agreement between repeated measurements of the same concentration (which shall be the midpoint of the stated range) expressed as the average deviation of the single results from the mean;

Operation period -- The period of time over which the instrument can be expected to operate unattended within specifications;

Noise -- Spontaneous deviations from a mean output not caused by input concentrations changes;

Interference equivalent -- The portion of indicated concentration due to the total of the interferences commonly found in ambient air;

Operating temperature fluctuation -- The portion of indicated concentration over which stated specifications will be met;

Linearity -- The maximum deviation between an actual instrument reading and the reading predicted by a straight line drawn between upper and lower calibration points.

REGULATION NO. AP-10

KENTUCKY AIR POLLUTION
CONTROL COMMISSION

(2.0) SUBJECT: Rules of Practice

(2.0) 1. Purpose

This regulation governs the conduct of all proceedings before the Commission.

(1.0) 2. Definitions

As used in this regulation, unless otherwise required by the context, the following words and phrases shall have the meaning hereinafter respectively ascribed to them:

(1) "Applicant" means any person who shall apply to the Commission for a permit to construct or operate an air contaminant source pursuant to KRS 224.360; or any person who requests a hearing pursuant to KRS 224.390; or any person who shall apply for an exemption pursuant to KRS 224.410; or any person who shall file a petition alleging that the issuance of any order or the making of any determination by the Commission is contrary to law and fact and injurious to him; or any person who shall apply to the Commission for certification to any governmental agency that the air contaminant source for which the certification is sought complies with all statutes and regulations of the Commonwealth relating to air pollution control.

(2) "Permit" means the permission, in whatever form given, of the Commission to construct, alter, use, operate, or maintain an air contaminant source.

(3.0) 3. Administrative Examination of Applications

Applications for the issuance of a permit, amendment of a permit at the request of a holder, or renewal of a permit will be reviewed by the Executive Secretary. The application shall be made on a form provided by the Commission for that purpose. The Executive Secretary will give such notice of the filing of applications as is required under the applicable provisions of these regulations and such additional notices as he deem appropriate.

(3.0)
(16.0) 4. Action on Applications, Hearings

(1) The Executive Secretary shall either grant or deny any application for a permit and shall give written notice thereof to the applicant.

- (2) The Executive Secretary may upon his own initiative, direct the holding of a formal hearing prior to taking action on the application. The Executive Secretary will direct the holding of a formal hearing upon receipt of a written request therefor from the applicant or intervenor filed within thirty (30) days after the grant or denial of a permit.

(3.0)

5. Effect of Timely Renewal Applications

If at least thirty (30) days prior to the expiration of an existing permit authorizing any activity of a continuing nature, a permittee files an application for a renewal or for a new permit for the activity so authorized, the existing permit will not be deemed to have expired until the application has been granted or denied.

(2.0)

6. Notice of Violation

Prior to the institution of any proceeding for the revocation of a permit or for penalty pursuant to statute for alleged violation of any provision of the act, regulations, or conditions of a permit, the party charged with the violation shall be served with a written notice calling the facts to his attention and requesting a written explanation or statement in reply. Within fifteen (15) days of the receipt of such notice, the party notified with the violation shall file his reply with the Commission. If the notice relates to conditions or conduct which may be susceptible of correction or of being brought into full compliance by action of the party charged with the violation, he shall state in his reply the corrective steps taken or to be instituted in achieving correction and preventing further violations, and the date when such correction and full compliance will be achieved.

(8.0)

7. Emergency Orders

Upon the issuance of any emergency order pursuant to the provisions of KRS 224.400 the Executive Secretary shall fix a place and time, not more than 24 hours thereafter, for a hearing to be held before the Commission in accordance with the provisions of this regulation. Not more than 24 hours after the conclusion of such a hearing, and without adjournment thereof, the Commission shall affirm, modify, or set aside the order of the Executive Secretary.

(3.0)

8. Certification

- (1) The Executive Secretary shall certify to the appropriate governmental agency compliance with the statutes and regulations of the Commonwealth relating to air pollution on behalf of any party requesting such certification pursuant to any state or federal law provided the party making the request holds a valid permit to operate the air contaminant source for which the certification is sought.
- (2) In no event shall the Executive Secretary certify to any governmental agency that any air contaminant source for which no valid permit to operate has been issued is in compliance with the statutes and regulations of the Commonwealth relating to air pollution.

(2.0)

9. Ex Parte Communications

- (1) In no matter referred to the Commission or to a Hearing Officer for formal hearing, shall any person not a member or employee of the Commission or assigned to the Commission communicate ex parte with any member or employee of the Commission or any person assigned to the Commission other than counsel with respect to the merits of that matter prior to a final determination in the matter; nor shall any member or employee of the Commission or any person assigned to the Commission communicate with any Hearing Officer or member or members of the Commission with regard to any matter heard or to be heard for the adjudication by such Hearing Officer of member or members except as otherwise provided in this regulation.
- (2) Subject to the exceptions in subsection (3) of this section, an unauthorized ex parte communication is any communication related to the proceeding unless at the time of its presentation the contents are disclosed to all participants and interested parties in the proceeding.
- (3) The following communications shall not be considered unauthorized:
 - (a) Any request for information solely with respect to the status of the proceeding; or
 - (b) Any communication made with respect to a proceeding about which no public notice has been issued or the communicator has no actual notice of the pendency of the proceeding.

- (4) Any member or employee of the Commission or any person assigned to the Commission who received a communication which he knows or has reason to believe is unauthorized, shall promptly place the communication, or its substance, in the public file, and shall inform all interested parties in the proceedings of its existence and shall notify the communicator of the provisions of this section.
- (5) All participants and interested parties in a proceeding may request an opportunity to answer any allegations or contentions contained in an unauthorized ex parte communication. The Hearing Officer or the Commission before whom the matter is heard shall grant such request if it is determined that it would be unfair to deny the request.

(2.0) 10. Filing of Papers

Unless otherwise specified, papers required to be filed with the Commission shall be filed with the Executive Secretary of the Air Pollution Control Commission, State Department of Health, 275 East Main Street, Frankfort, Kentucky 40601. Papers required to be filed with the Commission shall be deemed filed upon actual receipt by the Commission at the place specified accompanied by proof of service upon the parties required to be served as provided in Section 13 of this regulation. Unless otherwise specified the filing when by mail or telegram shall upon actual receipt be deemed complete as of the date of deposit in the mail or with the telegraph company. Papers may be filed in person at the Commission's offices at 275 East Main Street, Frankfort, Kentucky.

(2.0) 11. Computation of Time

In computing any period of time prescribed or allowed by an applicable rule or regulation, notice or order, the provisions of KRS 446.030 shall apply.

(2.0) 12. Extension of Time

Extensions of time for filing or performing any act required or allowed to be done, and continuances of any proceeding or hearing, may be granted in the discretion of the Commission upon application and good cause shown by any party, or upon the initiative of the Commission or stipulation of all the parties. When a Hearing Officer has been designated for hearing, the discretion in granting extensions of time and continuances in matters relating to the hearing shall rest with the Hearing Officer.

(2.0) 13. Subpoenas, Service and Papers

Pursuant to the powers conferred by KRS 224.430, the Commission may issue subpoenas, subpoenas duces tecum and all necessary process in proceedings brought before or initiated by the Commission and such process shall extend to all parts of the Commonwealth. Service of process and proof of service may be made by registered mail or in the manner prescribed by Rule 4, Rules of Civil Procedure. The Hearing Officer may issue any subpoena or subpoena duces tecum requested by any party and shall show on the face of any subpoena or subpoena duces tecum issued the party requesting the appearance.

(2.0) 14. Representation

- (1) Except as provided in subsection (2) of this section any person appearing before the Commission may do so in person or by a representative. Any person transacting business with the Commission in a representative capacity may be required to show his authority to act in that capacity.
- (2) In a formal hearing a person may appear in person or be represented by an Attorney at Law.

(2.0) 15. Intervention

- (1) Any person whose interests may be affected by a proceeding may file a petition to intervene describing his interests, how it may be affected by Commission action, and the position he is taking in the matter. Service of copies of the petition shall be made upon all parties to the proceeding. The permittee, applicant, or respondent, upon notice and motion, and other parties by leave, may contest the right of the petitioner to intervene.
- (2) As soon as is practicable after filing of a petition for intervention and a hearing of argument, if any, the Commission or Hearing Officer will issue and serve an order either permitting or denying intervention. If the order is a denial of intervention, it shall contain a statement of the grounds. An order permitting intervention may be conditioned upon such terms as the Commission or Hearing Officer may direct.

(2.0) 16. Effect of Intervention or Denial Thereof

- (1) A person permitted to intervene becomes a party to the proceedings where a notice of hearing has been issued or a

hearing has begun. The admission of an intervenor shall not of itself enlarge or alter the issue.

- (2) An order denying intervention will be without prejudice to any proposed limited appearance by the petitioner as one who is not a party for the purposes provided in Section 22 of this regulation.

(2.0) 17. Consolidation

Upon motion and good cause shown or upon its own initiative the Commission or Hearing Officer may consolidate two or more proceedings.

(16.0) 18. Hearing -- Formal and Informal

- (1) Formal hearings shall be held in cases of adjudication of rights.
- (2) Informal hearings may be held for the purposes of obtaining necessary or useful information.

(2.0) 19. Authority to Administer Oaths

Any oath or affirmation required by or pursuant to the provisions of these regulations may be administered by any person authorized to administer oaths by the laws of the Commonwealth of Kentucky.

(16.0) 20. Informal Hearing Procedure

The procedure to be followed in informal hearings shall be such as will best serve the purpose of the hearing. An informal hearing may consist of the submission of written data, views, or arguments with or without oral argument, or may partake of the nature of a conference or may assume some of the aspects of a formal hearing in which the subpoena of witnesses and the production of evidence may be permitted or directed.

(16.0) 21. Formal Hearings

The parties to a formal hearing shall be the Commission, the permittee, applicant, or respondent, as the case may be, and any person permitted to intervene pursuant to Section 15 of this regulation.

(2.0) 22. Limited Appearances by Persons Not Parties

With the consent of the Hearing Officer, limited appearances may be entered without request for or grant of permission to

intervene by persons who are not parties to a hearing. With the consent of the Hearing Officer, and on due notice to the parties, such persons may make oral or written statements of their position on the issues involved in the proceeding, but may not otherwise participate in the hearing.

(16.0) 23. Designation of Hearing Officer

Any hearing herein provided for may be conducted by the Commission at a regular or special meeting or may be conducted by a Hearing Officer, selected in rotation from a list of qualified persons maintained by the Executive Secretary, who shall have the power and authority to conduct hearings in the name of the Commission at any time and place.

(16.0) 24. Function of Hearing Officer

It shall be the function of the Hearing Officer to schedule and conduct hearings on behalf and in the name of the Commission on all matters referred for hearing by the Executive Secretary. It is the duty of the Hearing Officer to cause to be prepared and furnished to the Commission for decision a written record of the hearing. The Hearing Officer shall also prepare for the Commission for decision a statement of findings and conclusions upon all material issues of fact and law and shall prepare or cause to be prepared an order recommended to be issued by the Commission in the matter. The record of the hearing shall be a summary of all evidence, pleas, motions and objections of all parties, and rulings by the Hearing Officer unless a request for verbatim transcript is filed with the Commission at least fifteen (15) days prior to the commencement of the hearing. If a verbatim transcript is requested by any party before the hearing, the cost of preparing such verbatim transcript shall be paid by the party requesting it.

(16.0) 25. Notice of Hearing

- (1) Whenever a hearing is scheduled, the Commission will give not less than thirty (30) days notice of the hearing to all parties and to other persons, if any, entitled to notice. Such notice shall state the time, place, and nature of the hearing; the legal authority and jurisdiction under which the hearing is to be held; the matters of fact and law asserted to be considered and a request for an answer. The time and place for hearing will be fixed with due regard for the convenience and necessity of the parties or their representatives.
- (2) The notice of hearing may be a separate notice or when appropriate may be embodied in the Notice of Violation.

(2.0)

26. Answer

- (1) Within the time allowed by the notice of hearing for filing and serving an answer, and as required, the answer of a permittee, applicant, or respondent, shall fully advise the Commission and any other parties as to the nature of the defense or other position of the answering party, the issues he proposes to controvert and those he does not controvert, and whether or not he proposes to appear and present evidence. If facts are alleged the answer shall admit or deny specifically each allegation of fact; or where knowledge is lacking, the answer may so state and the statement shall operate as a denial. Allegations of fact not denied shall be deemed to be admitted. Matters alleged as affirmative defenses or positions shall be separately stated and identified and, in the absence of a reply, shall be deemed to be controverted. The answer of an intervenor shall fully advise the Commission and other parties of his position and whether or not he proposes to appear and present evidence.
- (2) If a party does not oppose any order or proposed action of the Commission embodied in or accompanying the notice of hearing or does not wish to appear and give evidence at the hearing, the answer shall so state. In lieu of appearing, the party may if he chooses submit a statement of reasons why the proposed order or sanction should not be issued or should be different than proposed, and the Commission will attribute such weight as it deems deserving to the written reasons.

(2.0)

27. Reply

In appropriate cases the Commission may file and serve a reply to the answer or, if the answer affects other parties to the proceeding, the Commission or the Hearing Officer before whom the matter is to be heard may permit such parties to file and serve a reply.

(2.0)

28. Default

Failure of a party to file and serve an answer within the time provided in the notice of hearing or as prescribed herein or to appear at a hearing, shall be deemed to authorize the Commission in its discretion, as to such party: (a) to find the facts alleged to be true and to enter such finding or order as may be appropriate, without further notice or hearing; or, (b) to proceed to take proof, without further notice, on the allegations or issues set forth in the specification of issues.

(2.0)

29. Admissions

After the answer has been filed, any party may file and serve upon the opposing side a written request for the admission of the genuineness and authenticity of any relevant documents described in or attached to the request or for the admission of the truth of any relevant matters of fact stated in the request. Each matter for which an admission is requested shall be deemed admitted unless within the time designated in the request, but not less than ten (10) days after service thereof or further time as the Commission or Hearing Officer before whom the matter is to be heard may allow upon motion and notice, the party to whom the request is directed serves upon the requesting party a sworn statement either denying the matters upon which the admission is requested or setting up the reasons why he cannot truthfully admit or deny such matters.

(16.0)

30. Public Hearings

All formal hearings shall be public except that evidence relating to processes or production unique to the owner or operator which would tend to affect adversely the competitive position of such owner or operator shall be taken in closed session.

(16.0)

31. Evidence in Formal Hearings

- (1) Every party to the hearing shall have the right to present such oral or documentary evidence and rebuttal evidence and conduct such cross-examination as may be required for a full and true disclosure of the facts. The parties shall be encouraged to present evidence in written form.
- (2) The Hearing Officer shall exclude all irrelevant, immaterial, or unduly repetitious evidence.
- (3) Objections to the admission or exclusion of evidence shall state the grounds of objections. The record shall include the objections, the grounds and the rulings, but not the argument of the grounds unless ordered by the Hearing Officer.
- (4) Any offer of proof made in connection with an objection taken to the ruling of the Hearing Officer, excluding or rejecting proffered oral testimony, shall consist of a statement of the substance of the evidence which the party contends would be adduced by such testimony. If the excluded material is documentary or written, a copy of such material shall be marked for identification and shall constitute the offer of proof.

- (5) An official record of a governmental agency of an entry in such record, when admissible, may be evidenced by an official publication thereof or by a copy attested as a true copy by the officer having legal custody of the record, or by his deputy, and accompanied by a certificate that such officer has the custody.

(2.0) 32. Briefs

Briefs may be filed within ten (10) days after the close of the hearing provided, however, that the Commission or Hearing Officer having heard the matter may, upon written application, grant an additional period of time not in excess of sixty (60) days within which briefs may be filed.

(2.0) 33. Findings and Order

The Commission in a regular or special meeting shall after reviewing the entire record of the hearing make its findings and enter its order. The findings and order shall be in writing and shall contain a statement of findings and conclusions upon all material issues of fact and law and shall be signed by the Chairman of the Commission. The original thereof shall be filed as a part of the record of the case which shall be retained in the custody of the Secretary unless an appeal is taken therefrom and one certified copy of the findings and order shall be served on all parties to the proceedings.

(2.0) 34. Oral Argument Before the Commission

- (1) The Findings, Conclusions, and Recommended Order of the Hearing Officer shall be filed with the Secretary as soon after the conclusion of the hearing as possible. Within three (3) days after the receipt the Secretary shall cause a copy of the Hearing Officer's Findings, Conclusions, and Recommended Order to be served upon each party to the proceeding. Any party may request, either orally or in writing, at the first meeting of the Commission following service of the Hearing Officer's Findings, Conclusions, and Recommended Order that he be allowed to address the Commission prior to the Commission's taking any action on the Hearing Officer's Findings, Conclusions, and Recommended Order served upon him. The Commission upon receiving the request may in its discretion, hear the party at the next meeting, whether regular or special, of the Commission.

- (2) Any person who shall be granted permission to address the Commission shall be allowed a reasonable time to speak.
- (3) Any statement made to the Commission pursuant to the provisions in this section shall be limited to matters contained in the record of hearing.

(2.0) 35. Waiver of Procedures

The parties to any hearing may agree to waive any one or more of the procedural steps which would otherwise precede the reaching of a final decision by the Commission.

(13.0)
(14.0) 36. Public Records -- Exceptions

Except as provided below all records shall be deemed public records and shall be open to inspection by the public. The following are not to be considered public records which are available for public inspection:

- (1) Documents relating to personnel matters and medical and other personnel information, which; under general governmental personnel practices, are not normally made public;
- (2) Correspondence received in confidence by the Commission relating to an alleged or possible violation of any statute, rule, regulation, order, license or permit;
- (3) Any other document involving matters of internal agency management;
- (4) Any other matter required by law to be kept confidential or not available to public inspection;
- (5) Any records or memoranda which would divulge methods or processes entitled to protection as trade secrets;
- (6) The Commission may withhold any document or part thereof from public inspection if disclosure of its contents is not required in the public interest and would adversely affect the interest of a person concerned. Such withholding from public inspection shall not, however, affect the right of persons properly and directly concerned to inspect the document. Persons requesting that a document or information therein be withheld from public disclosure shall make prompt application identifying the material and giving the reasons. Where the applicant is responsible for the preparation of the document, he shall

insofar as is possible segregate in a separate paper the information for which the special treatment is requested. The Commission may honor the request upon a finding that public inspection is not required in the public interest and would adversely affect the interest of the person concerned. If the request is denied, the applicant will be notified thereof with a statement of reasons.

REGULATION NO. AP-11
KENTUCKY AIR POLLUTION
CONTROL COMMISSION

(10.0) SUBJECT: Review of New or Modified Indirect Sources

(1.0) 1. Definitions

- (1) Indirect source - means a facility, road, building structure, or installation, or combination thereof, which causes or may cause mobile source activity that results in emission of a pollutant for which there is a state ambient air quality standard.
 - (2) Modification - means any physical change to an indirect source other than maintenance which increases or may increase the mobile source activity associated with such indirect source.
 - (3) Department - means the Kentucky Department for Natural Resources and Environmental Protection.
 - (4) Commence - means that an owner or operator has undertaken a continuous program of construction or modification or that a binding general construction contract has been entered into which obligates one party to such contract to perform the physical work involved in such program of construction or modification or that actual acquisition of the right-of-way has begun.
 - (5) Vehicle trip - means a single movement by a motor vehicle which originates or terminates at an indirect source.
2. The requirements of this regulation are applicable to the following indirect sources, the construction or modification of which is commenced after the effective date of this regulation.
- (1) Any new indirect source which:
 - (a) Is a new unenclosed parking lot with a parking capacity of 1,500 or more motor vehicles, or has a new associated unenclosed single level parking area with a capacity of 1,500 or more motor vehicles;

- (b) is a new partially or completely enclosed parking area with a parking capacity of 750 or more motor vehicles, or has a new associated partially or completely enclosed parking area with a capacity of 750 or more motor vehicles; or
 - (c) induces an additional 2,000 or more vehicle trips per hour in an existing roadway.
- (2) Any modified indirect source which:
 - (a) Increases existing parking capacity in an unenclosed single level parking area from less than 1,500 motor vehicles to 1,500 or more motor vehicles, or has an associated unenclosed parking area being modified to increase parking capacity by more than 1,500 motor vehicles; or
 - (b) increases existing parking capacity in a partially or completely enclosed parking area from less than 750 motor vehicles to 750 or more motor vehicles, or has an associated partially or completely enclosed parking area being modified to increase parking capacity by more than 750 motor vehicles; or
 - (c) is an existing unenclosed single level parking area which is in excess of 1,500 motor vehicles being modified to increase parking capacity by more than 25 percent, or by 1,500 or more motor vehicles, whichever is less, or, has an existing associated unenclosed single level parking area which is in excess of 1,500 or more motor vehicles, whichever is less; or
 - (d) is an existing partially or completely enclosed parking area which is in excess of 750 motor vehicles being modified to increase parking capacity by more than 25 percent, or by 750 or more motor vehicles, whichever is less, or, has an existing associated partially or completely enclosed parking area which is in excess of 750 motor vehicles being modified to increase parking capacity by more than 25 percent, or by 750 or more motor vehicles, whichever is less; or
 - (e) induces an additional 2,000 or more vehicle trips per hour in an existing roadway.
- (3) Airports served by a regularly scheduled commercial air carrier(s).

- (4) New or modified roads in standard metropolitan statistical areas as defined by Bureau of Census, U.S. Department of Commerce or in counties containing a city with a population of 20,000 or more, with a forecasted design hourly volume within ten years of completion of:
 - (a) 2,000 or more motor vehicles per hour for a new road; or
 - (b) existing road with traffic volume of less than 2,000 motor vehicles being modified to increase traffic volume in 2,000 or more motor vehicles; or
 - (c) existing road with traffic volume of more than 2,000 motor vehicles being modified to increase traffic by 25 percent, or by 2,000 or more motor vehicles, whichever is less.
 - (5) Where an indirect source is constructed or modified in increments which individually are not subject to review under this section, all such increments occurring since the effective date of this regulation shall be added together for determining the applicability of this section.
3. No owner or operator of an indirect source subject to this regulation shall commence construction or modification of such source after the effective date of this regulation without first obtaining approval from the Department.
- (1) Application for approval to construct or modify shall be made on forms furnished by the Department and shall include as a minimum the following information:
 - (a) The name and address of owner and/or operator.
 - (b) The description of the location and design of such source, including its relation to surrounding roadways.
 - (c) The total motor vehicle parking capacity before and after the construction or modification of the indirect source.
 - (d) The normal hours of operation of the facility and the enterprises and activities which it serves.
 - (e) The number of people using or engaging in any enterprises or activities which the facility will serve.

- (f) The estimated average and maximum number of vehicle trips generated by the indirect source for one-hour and eight-hour time period.
 - (g) Estimates of the effect of the construction or modification of the indirect source on traffic patterns and flow in the vicinity.
 - (h) Measured ambient air quality data at the site of the indirect source prior to construction or modification. Estimated ambient air quality data may be accepted by the Department where the applicant can show that such estimates were made in accordance with techniques established by the Department.
 - (i) An estimate of the effect of the construction or modification of the indirect source on total vehicle mile of travel and additional residential, commercial and industrial development which may occur as a result of such construction or modification.
- (2) A separate application is required for each indirect source.
 - (3) Each application shall be signed by the owner or operator, which signature shall constitute an agreement that the applicant will assume responsibility for the construction, modification or operation of the source in accordance with applicable rules and regulations, and the design submitted in the application.
 - (4) Any additional information, plans, specifications, evidence or documentation that the Department may require shall be furnished upon request.
4. No approval to construct or modify will be granted unless the applicant shows to the satisfaction of the Department that:
- (1) The source will be operated without causing a violation of the control strategy which is part of the applicable plan, and
 - (2) The emission resulting from the mobile source activity associated with the facility will not prevent or interfere with the attainment or maintenance of the ambient air quality standards.

5. The Department will notify the applicant and the public by prominent advertisement in the region affected of the opportunity for public comment on the information submitted by the owner or operator.
 - (1) Such information, including the Department's analysis of the effect of the indirect source on air quality as related to expected ambient concentrations of carbon monoxide, photochemical oxidants, and nitrogen oxides following construction or modification, and the Department's proposed approval or disapproval, will be available in at least one location in the region affected.
 - (2) Public comments submitted within 30 days of the date such information is made available will be considered by the Department in making a final decision on the application.
 - (3) The Department will take final action on an application within 30 days after the close of public comment period. The Department will notify the applicant in writing of its approval, or denial of the application, and will set forth its reasons for denial.
6. The Department may impose any reasonable conditions on an approval, including conditions requiring the source owner or operator to conduct ambient air quality monitoring in the vicinity of the site of the source for a reasonable period prior to commencement of construction or modification, and/or for any specified period after the facility has commenced operation.
7. Approval to construct or modify shall not relieve any owner or operator of the responsibility to comply with the control strategy and all local, State, and Federal regulations which are part of the applicable Kentucky Implementation Plan.
8. This regulation shall become effective upon final adoption.

FEDERALLY PROMULGATED
REGULATIONS

(6.0)

52.927 Compliance Schedules.

- (a) The requirements of § 51.15(c) of this chapter are not met since compliance schedules with adequate increments of progress have not been submitted for every source for which they are required.
- (b) Federal compliance schedules.
 - (1) Except as provided in paragraph (b) (5) of this section, the owner or operator of any fuel-burning facility subject to the requirements of the Kentucky Air Pollution Control Regulations as they apply to sulfur dioxide sources, shall notify the Regional Administrator, by no later than November 3, 1975, of his intent to utilize either low-sulfur fuel or stack gas desulfurization to meet these requirements.
 - (2) Any owner or operator of a stationary source subject to paragraph (b) (1) of this section who elects to utilize low-sulfur fuel shall be subject to the following compliance schedule:
 - (i) December 1, 1975 - Submit to the Regional Administrator a projection of the amount of fuel, by types, that will be substantially adequate to enable compliance with the applicable regulation on July 1, 1977, and for at least one year thereafter, as well as a statement as to whether boiler modifications will be required. If so, final plans for such modifications must be submitted simultaneously.
 - (ii) December 31, 1975 - Sign contracts with fuel suppliers for projected fuel requirements as projected above.
 - (iii) December 31, 1975 - Let contracts for necessary boiler modifications, if applicable.
 - (iv) January 30, 1976 - Initiate onsite modifications, if applicable.
 - (v) May 1, 1977 - Complete onsite modifications, if applicable.
 - (vi) July 1, 1977 - Achieve compliance with the applicable regulations, and certify such compliance to the Regional Administrator.
 - (3) Any owner or operator subject to subparagraph (1) of this paragraph who elects to utilize stack gas desulfurization shall be subject to the following compliance schedule:

- (i) December 1, 1975 - Submit to the Regional Administrator a final control plan, which describes at a minimum the steps which will be taken by the source to achieve compliance with the applicable regulations.
 - (ii) December 31, 1975 - Negotiate and sign all necessary contracts for emission control systems or process modifications, or issue orders for the purchase of component parts to accomplish emission control or process modifications.
 - (iii) January 30, 1976 - Initiate onsite construction or installation of emission control equipment or process modification.
 - (iv) May 1, 1977 - Complete onsite construction or installation or emission control equipment or process modification.
 - (v) July 1, 1977 - Complete shakedown operations and performance tests for the applicable unit(s); achieve compliance with Kentucky Division of Air Pollution Regulation for sulfur dioxide sources and certify such compliance to the Regional Administrator. Ten days prior to any performance testing, notice must be given to the Regional Administrator to afford him the opportunity to have an observer present.
- (4) Five days after the deadline for completing increments in paragraphs (b) (2) (ii) through (b) (2) (v) and (b) (3) (ii) through (b) (3) (iv) of this section, certify to the Regional Administrator whether the increment has been met.
- (5) (i) None of the above subparagraphs shall apply to a source which is presently in compliance with applicable regulations. The owner or operator of any fuel-burning facility with an aggregate heat input of more than 250 million BTU per hour which is presently in compliance, shall certify such compliance to the Regional Administrator by November 3, 1975. The Regional Administrator may request whatever supporting information he considers necessary for proper certification.
- (ii) Any compliance schedule adopted by the State and approved by the Administrator shall satisfy the requirements of this paragraph for the affected source.
- (iii) Any owner or operator subject to a compliance schedule in this paragraph may submit to the Regional Administrator no later than December 1, 1975, a proposed alternative compliance schedule. No such compliance schedule

may provide for final compliance after the final compliance date in the applicable compliance schedule of this paragraph. If approved by the Administrator, such schedule shall satisfy the requirements of this paragraph for the affected source.

- (6) Nothing in this paragraph shall preclude the Administrator from promulgating a separate schedule for any source to which the application of a compliance schedule in this paragraph fails to satisfy the requirements of § 51.15 (b) and (c) of this chapter.
- (c) The compliance schedules for the sources identified below are approved as meeting the requirements of §§ 51.6 and 51.15 of this chapter. All regulations cited are air pollution control regulations of the State, except in the case of Jefferson County schedules, for which the regulations cited are those of the local air pollution control agency.

(17.0) 52.931 Prevention of Significant Deterioration

(b) Definitions. For the purposes of this section:

- (1) "Facility" means an identifiable piece of process equipment. A stationary source is composed of one or more pollutant-emitting facilities.
- (2) The phrase "Administrator" means the Administrator of the Environmental Protection Agency or his designated representative.
- (3) The phrase "Federal Land Manager" means the head, or his designated representative, of any Department or Agency of the Federal Government which administers federally-owned land, including public domain lands.
- (4) The phrase "Indian Reservation" means any federally-recognized reservation established by Treaty, Agreement, Executive Order, or Act of Congress.
- (5) The phrase "Indian Governing Body" means the governing body of any tribe, band, or group of Indians subject to the jurisdiction of the United States and recognized by the United States as possessing power of self-government.
- (6) "Construction" means fabrication, erection or installation of a stationary source.
- (7) "Commenced" means that an owner or operator has undertaken a continuous program of construction or modification or that an owner or operator has entered into a contractual obligation to undertake and complete, within a reasonable time, a continuous program of construction or modification.

(c) Area designation and deterioration increment

- (1) The provisions of this paragraph have been incorporated by reference into the applicable implementation plans for various States, as provided in Subparts B through DDD of this part. Where this paragraph is so incorporated, the provisions shall also be applicable to all lands owned by the Federal Government and Indian Reservations located in such State. The provisions of this paragraph do not apply in those counties or other functionally equivalent areas that pervasively exceeded any national ambient air quality standards during 1974 for sulfur dioxide or particulate matter and then only with respect to such pollutants. States may notify the Administrator at any time of those areas which exceeded the national standards during 1974 and therefore are exempt from the requirements of this paragraph.

- (2) (i) For purposes of this paragraph, areas designated as Class I or II shall be limited to the following increases in pollutant concentration occurring since January 1, 1975:

Area Designations		
Pollutant	Class I (ug/m ³)	Class II (ug/m ³)
Particulate matter:		
Annual geometric mean	5	10
24-hr maximum	10	30
Sulfur dioxide:		
Annual arithmetic mean	2	15
24-hr maximum	5	100
3-hr maximum	25	700

- (ii) For purposes of this paragraph, areas designated as Class III shall be limited to concentrations of particulate matter and sulfur dioxide no greater than the national ambient air quality standards.
- (iii) The air quality impact of sources granted approval to construct or modify prior to January 1, 1975 (pursuant to the approved new source review procedures in the plan) but not yet operating prior to January 1, 1975, shall not be counted against the air quality increments specified in paragraph (c) (2) (i) of this section.
- (3) (i) All areas are designated Class II as of the effective date of this paragraph. Redesignation may be proposed by the respective States, Federal Land Manager, or Indian Governing Bodies, as provided below, subject to approval by the Administrator.
- (ii) The State may submit to the Administrator a proposal to redesignate areas of the State Class I, Class II, or Class III, provided that:
- (a) At least one public hearing is held in or near the area affected and this public hearing is held in accordance with procedures established in 51.4 of this chapter, and
- (b) Other States, Indian Governing Bodies, and Federal Land Managers whose lands may be affected by the proposed redesignation are notified at least 30 days prior to the public hearing, and

- (c) A discussion of the reasons for the proposed redesignation is available for public inspection at least 30 days prior to the hearing and the notice announcing the hearing contains appropriate notification of the availability of such discussion, and
 - (d) The proposed redesignation is based on the record of the State's hearing, which must reflect the basis for the proposed redesignation, including consideration of (1) growth anticipated in the area, (2) the social, environmental, and economic effects of such redesignation upon the area being proposed for redesignation and upon other areas and States, and (3) any impacts of such proposed redesignation upon regional or national interests.
 - (e) The redesignation is proposed after consultation with the elected leadership of local and other sub-state general purpose governments in the area covered by the proposed redesignation.
- (iii) Except as provided in paragraph (c) (3) (iv) of this section, a State in which lands owned by the Federal Government are located may submit to the Administrator a proposal to redesignate such lands Class I, Class II, or Class III in accordance with subdivision (ii) of this subparagraph provided that:
- (a) The redesignation is consistent with adjacent State and privately owned land, and
 - (b) Such redesignation is proposed after consultation with the Federal Land Manager.
- (iv) Notwithstanding subdivision (iii) of this subparagraph, the Federal Land Manager may submit to the Administrator a proposal to redesignate any Federal lands to a more restrictive designation than would otherwise be applicable provided that:
- (a) The Federal Land Manager follows procedures equivalent to those required of States under paragraph (c) (3) (ii) and,
 - (b) Such redesignation is proposed after consultation with the State(s) in which the Federal Land is located or which border the Federal Land.
- (v) Nothing in this section is intended to convey authority to the States over Indian Reservations where States have not assumed such authority under other laws nor is it intended to deny jurisdiction which States have assumed

under other laws. Where a State has not assumed jurisdiction over an Indian Reservation the appropriate Indian Governing Body may submit to the Administrator a proposal to redesignate areas Class I, Class II, or Class III, provided that:

- (a) The Indian Governing Body follows procedures equivalent to those required of States under paragraph (c) (3) (ii) and,
- (b) Such redesignation is proposed after consultation with the State(s) in which the Indian Reservation is located or which border the Indian Reservation and, for those lands held in trust, with the approval of the Secretary of the Interior.

(vi) The Administrator shall approve, within 90 days, any redesignation proposed pursuant to this subparagraph as follows:

- (a) Any redesignation proposed pursuant to subdivisions (ii) and (iii) of this subparagraph shall be approved unless the Administrator determines (1) that the requirements of subdivisions (ii) and (iii) of this subparagraph have not been complied with, (2) that the State has arbitrarily and capriciously disregarded relevant considerations set forth in subparagraph (3) (ii) (d) of this paragraph, or (3) that the State has not requested and received delegation of responsibility for carrying out the new source review requirements of paragraphs (d) and (e) of this section.
- (b) Any redesignation proposed pursuant to subdivision (iv) of this subparagraph shall be approved unless he determines (1) that the requirements of subdivision (iv) of this subparagraph have not been complied with, or (2) that the Federal Land Manager has arbitrarily and capriciously disregarded relevant considerations set forth in subparagraph (3) (ii) (d) of this paragraph.
- (c) Any redesignation submitted pursuant to subdivision (v) of this subparagraph shall be approved unless he determines (1) that the requirements of subdivision (v) of this subparagraph have not been complied with, or (2) that the Indian Governing Body has arbitrarily and capriciously disregarded relevant considerations set forth in subparagraph (3) (ii) (d) of this paragraph.

(d) Any redesignation proposed pursuant to this paragraph shall be approved only after the Administrator has solicited written comments from affected Federal agencies and Indian Governing Bodies and from the public on the proposal.

(e) Any proposed redesignation protested to the proposing State, Indian Governing Body, or Federal Land Manager and to the Administrator by another State or Indian Governing Body because of the effects upon such protesting State or Indian Reservation shall be approved by the Administrator only if he determines that in his judgment the redesignation appropriately balances considerations of growth anticipated in the area proposed to be redesignated; the social, environmental and economic effects of such redesignation upon the area being redesignated and upon other areas and States; and any impacts upon regional or national interests.

(f) The requirements of paragraph (c) (3) (vi) (a) (3) that a State request and receive delegation of the new source review requirements of this section as a condition to approval of a proposed redesignation, shall include as a minimum receiving the administrative and technical functions of the new source review. The Administrator will carry out any required enforcement action in cases where the State does not have adequate legal authority to initiate such actions. The Administrator may waive the requirements of paragraph (c) (3) (vi) (a) (3) if the State Attorney-General has determined that the State cannot accept delegation of the administrative/technical functions.

(vii) If the Administrator disapproves any proposed area designation under this subparagraph, the State, Federal Land Manager or Indian Governing Body, as appropriate, may re-submit the proposal after correcting the deficiencies noted by the Administrator or reconsidering any area designation determined by the Administrator to be arbitrary and capricious.

(d) Review of new sources

(1) The provisions of this paragraph have been incorporated by reference into the applicable implementation plans for various States, as provided in Subparts B through DDD of this part. Where this paragraph is so incorporated, the requirements of this paragraph apply to any new or modified stationary source of the type identified below which has not commenced construction or modification prior to June 1, 1975 except as specifically provided below. A

source which is modified, but does not increase the amount of sulfur oxides or particulate matter emitted, or is modified to utilize an alternative fuel, or higher sulfur content fuel, shall not be subject to this paragraph.

- (i) Fossil-Fuel Steam Electric Plants of more than 1000 million B.T.U. per hour heat input.
 - (ii) Coal Cleaning Plants.
 - (iii) Kraft Pulp Mills.
 - (iv) Portland Cement Plants.
 - (v) Primary Zinc Smelters.
 - (vi) Iron and Steel Mills.
 - (vii) Primary Aluminum Ore Reduction Plants.
 - (viii) Primary Copper Smelters.
 - (ix) Municipal Incinerators capable of charging more than 250 tons of refuse per 24 hour day.
 - (x) Sulfuric Acid Plants.
 - (xi) Petroleum Refineries.
 - (xii) Lime Plants.
 - (xiii) Phosphate Rock Processing Plants.
 - (xiv) By-Product Coke Oven Batteries.
 - (xv) Sulfur Recovery Plants.
 - (xvi) Carbon Black Plants (furnace process).
 - (xvii) Primary Lead Smelters.
 - (xviii) Fuel Conversion Plants.
 - (xix) Ferroalloy production facilities commencing construction after October 5, 1975.
- (2) No owner or operator shall commence construction or modification of a source subject to this paragraph unless the Administrator determines that, on the basis of information submitted pursuant to subparagraph (3) of this paragraph:

- (i) The effect on air quality concentration of the source or modified source, in conjunction with the effects of growth and reduction in emissions after January 1, 1975, of other sources in the area affected by the proposed source, will not violate the air quality increments applicable in the area where the source will be located nor the air quality increments applicable in any other areas. The analysis of emissions growth and reduction after January 1, 1975, of other sources in the areas affected by the proposed source shall include all new and modified sources granted approval to construct pursuant to this paragraph; reduction in emissions from existing sources which contributed to air quality during all or part of 1974; and general commercial, residential, industrial, and other sources of emissions growth not exempted by paragraph (c) (2) (iii) of this section which has occurred since January 1, 1975.
 - (ii) The new or modified source will meet an emission limit, to be specified by the Administrator as a condition to approval, which represents that level of emission reduction which would be achieved by the application of best available control technology, as defined in 52.01 (f), for particulate matter and sulfur dioxide. If the Administrator determines that technological or economic limitations on the application of measurement methodology to a particular class of sources would make the imposition of an emission standard infeasible, he may instead prescribe a design or equipment standard requiring the application of best available control technology. Such standard shall to the degree possible set forth the emission reductions achievable by implementation of such design or equipment, and shall provide for compliance by means which achieve equivalent results.
 - (iii) With respect to modified sources, the requirements of subparagraph (2) (ii) of this paragraph shall be applicable only to the facility or facilities from which emissions are increased.
- (3) In making the determinations required by paragraph (d) (2) of this section, the Administrator shall, as a minimum, require the owner or operator of the source subject to this paragraph to submit: site information, plans, description, specifications, and drawings showing the design of the source; information necessary to determine the impact that the construction or modification will have on sulfur dioxide and particulate matter air quality levels; and any other information necessary to determine that best available control technology will be applied. Upon request of the Administrator, the owner or operator of the source shall provide information on the nature and extent of general commercial, residential, industrial, and other growth which has occurred in the area affected by the source's emissions (such area to be specified by the

Administrator) since January 1, 1975.

- (4) (i) Where a new or modified source is located on Federal Lands, such source shall be subject to the procedures set forth in paragraphs (d) and (e) of this section. Such procedures shall be in addition to applicable procedures conducted by the Federal Land Manager for administration and protection of the affected Federal Lands. Where feasible, the Administrator will coordinate his review and hearings with the Federal Land Manager to avoid duplicate administrative procedures.
 - (ii) New or modified sources which are located on Indian Reservations shall be subject to procedures set forth in paragraphs (d) and (e) of this section. Such procedures shall be administered by the Administrator in cooperation with the Secretary of the Interior with respect to lands over which the State has not assumed jurisdiction under other laws.
 - (iii) Whenever any new or modified source is subject to action by a Federal Agency which might necessitate preparation of an environmental impact statement pursuant to the National Environmental Policy Act (42 U.S.C. 4321), review by the Administrator conducted pursuant to this paragraph shall be coordinated with the broad environmental reviews under that Act, to the maximum extent feasible and reasonable.
- (5) Where an owner or operator has applied for permission to construct or modify pursuant to this paragraph and the proposed source would be located in an area which has been proposed for redesignation to a more stringent class (or the State, Indian Governing Body, or Federal Land Manager has announced such consideration), approval shall not be granted until the Administrator has acted on the proposed redesignation.

(e) Procedures for public participation

- (1) (i) Within 20 days after receipt of an application to construct, or any addition to such application, the Administrator shall advise the owner or operator of any deficiency in the information submitted in support of the application. In the event of such a deficiency, the date of receipt of the application for the purpose of paragraph (e) (1) (ii) of this section shall be the date on which all required information is received by the Administrator.
- (ii) Within 30 days after receipt of a complete application, the Administrator shall:

- (a) Make a preliminary determination whether the source should be approved, approved with conditions, or disapproved.
 - (b) Make available in at least one location in each region in which the proposed source would be constructed, a copy of all materials submitted by the owner or operator, a copy of the Administrator's preliminary determination and a copy or summary of other materials, if any, considered by the Administrator in making his preliminary determination; and
 - (c) Notify the public, by prominent advertisement in newspaper of general circulation in each region in which the proposed source would be constructed, of the opportunity for written public comment on the information submitted by the owner or operator and the Administrator's preliminary determination on the approvability of the source.
- (iii) A copy of the notice required pursuant to this subparagraph shall be sent to the applicant and to officials and agencies having cognizance over the locations where the source will be situated as follows: State and local air pollution control agencies, the chief executive of the city and county; any comprehensive regional land use planning agency; and any State, Federal Land Manager or Indian Governing Body whose lands will be significantly affected by the source's emissions.
- (iv) Public comments submitted in writing within 30 days after the date such information is made available shall be considered by the Administrator in making his final decision on the application. No later than 10 days after the close of the public comment period, the applicant may submit a written response to any comments submitted by the public. The Administrator shall consider the applicant's response in making his final decision. All comments shall be made available for public inspection in at least one location in the region in which the source would be located.
- (v) The Administrator shall take final action on an application within 30 days after the close of the public comment period. The Administrator shall notify the applicant in writing of his approval, conditional approval, or denial of the application, and shall set forth his reasons for conditional approval or denial. Such notification shall be made available for public inspection in at least one location in the region in which the source would be located.

- (vi) The Administrator may extend each of the time periods specified in paragraph (e) (1) (ii), (iv), or (v) of this section by no more than 30 days or such other period as agreed to by the applicant and the Administrator.
 - (2) Any owner or operator who constructs, modifies, or operates a stationary source not in accordance with the application, as approved and conditioned by the Administrator, or any owner or operator of a stationary source subject to this paragraph who commences construction or modification after June 1, 1975, without applying for and receiving approval hereunder, shall be subject to enforcement action under section 113 of the Act.
 - (3) Approval to construct or modify shall become invalid if construction or expansion is not commenced within 18 months after receipt of such approval or if construction is discontinued for a period of 18 months or more. The Administrator may extend such time period upon a satisfactory showing that an extension is justified.
 - (4) Approval to construct or modify shall not relieve any owner or operator of the responsibility to comply with the control strategy and all local, State, and Federal regulations which are part of the applicable State Implementation Plan.
- (f) Delegation of authority
- (1) The Administrator shall have the authority to delegate responsibility for implementing the procedures for conducting source review pursuant to paragraphs (d) and (e), in accordance with subparagraphs (2), (3), and (4) of this paragraph.
 - (2) Where the Administrator delegates the responsibility for implementing the procedures for conducting source review pursuant to this section to any Agency, other than a regional office of the Environmental Protection Agency, the following provisions shall apply:
 - (i) Where the agency designated is not an air pollution control agency, such agency shall consult with the appropriate State and local air pollution control agency prior to making any determination required by paragraph (d) of this section. Similarly, where the agency designated does not have continuing responsibilities for managing land use, such agency shall consult with the appropriate State and local agency which is primarily responsible for managing land use prior to making any determination required by paragraph (d) of this section.
 - (ii) A copy of the notice pursuant to paragraph (e) (1) (ii) (c) of this section shall be sent to the Administrator through the appropriate regional office.

- (3) In accordance with Executive Order 11752, the Administrator's authority for implementing the procedures for conducting source review pursuant to this section shall not be delegated, other than to a regional office of the Environmental Protection Agency, for new or modified sources which are owned or operated by the Federal government or for new or modified sources located on Federal lands; except that, with respect to the latter category, where new or modified sources are constructed or operated on Federal lands pursuant to leasing or other Federal agreements, the Federal land Manager may at his discretion, to the extent permissible under applicable statutes and regulations, require the lessee or permittee to be subject to a designated State or local agency's procedures developed pursuant to paragraphs (d) and (e) of this section.
- (4) The Administrator's authority for implementing the procedures for conducting source review pursuant to this section shall not be re-delegated, other than to a regional office of the Environmental Protection Agency, for new or modified sources which are located on Indian reservations except where the State has assumed jurisdiction over such land under other laws, in which case the Administrator may delegate his authority to the States in accordance with subparagraphs (2), (3), and (4) of this paragraph.

(39 FR 42514, Dec. 5, 1974; 40 FR 2802, Jan. 16, 1975, as amended at 40 FR 24535, June 9, 1975; 40 FR 25005, June 12, 1975; 40 FR 42012, Sept. 10, 1975)